Potential Output in a Pandemic: A Labor Market Perspective

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Introduction

- Background – Covid-19 affects people, not machines. It is truly the "neutron bomb" of macroeconomic shocks.

- Naturally, the largest impact should be on employment, both on the supply and demand sides, but *it the net impact is not obvious:*

– Direct impact through illness of workers

– Behavior of workers on the job – "home office" but also overall effort

– Behavior of workers off the job when searching for work

– Demand and supply shifts relative to each other across activities

– TFP and the reorganization of production

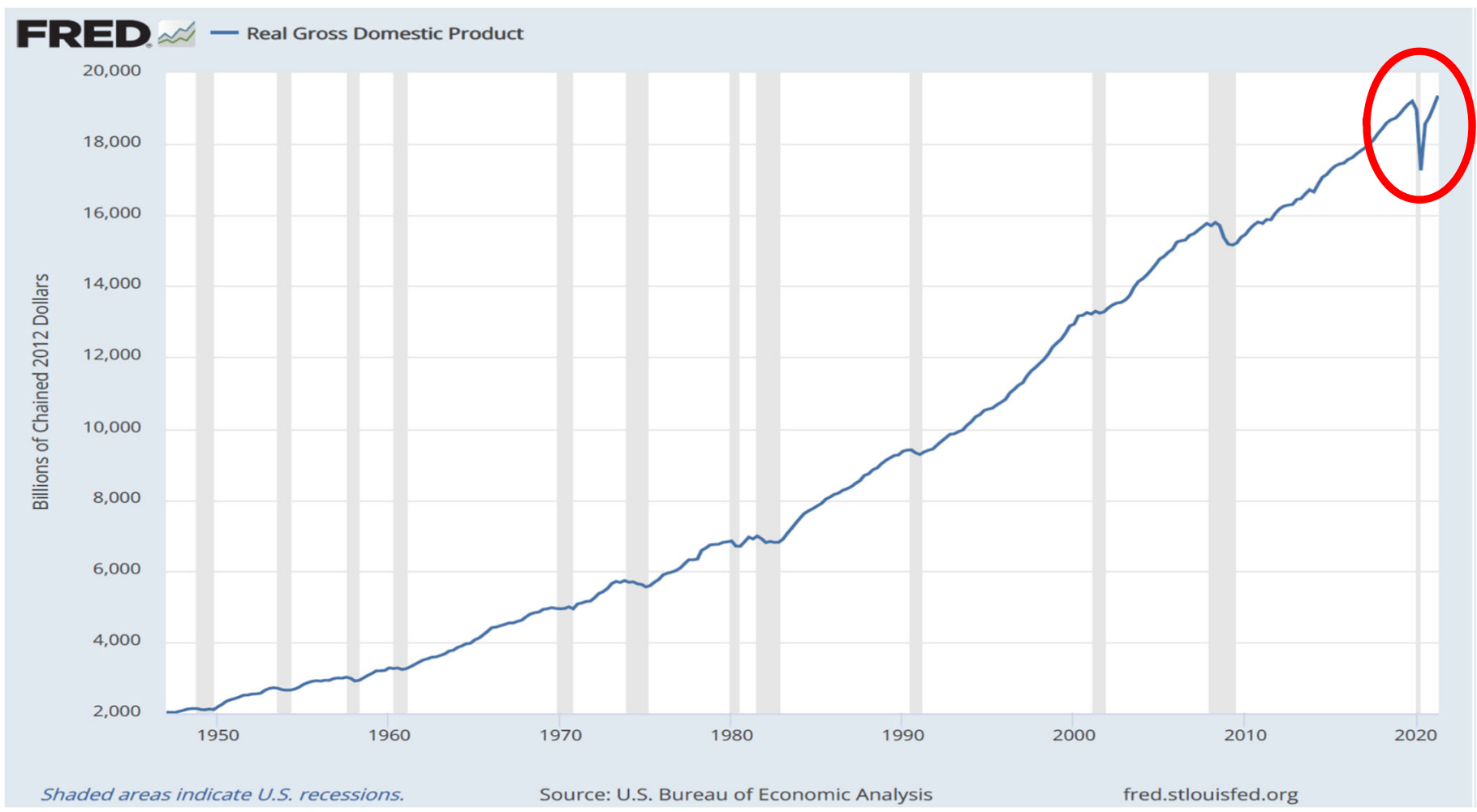- My focus: Labor market, labor productivity, structural change, wages

Questions

- What are the facts?

- How do we organize our thinking about those facts?

- What is the **macroeconomic interest** in these facts (cost-push inflation, workers shortages, supply chain difficulties, shifting Beveridge and Phillips curves)

- What role does the labor market play in all of this?

- How to think about **potential output** under these circumstances?
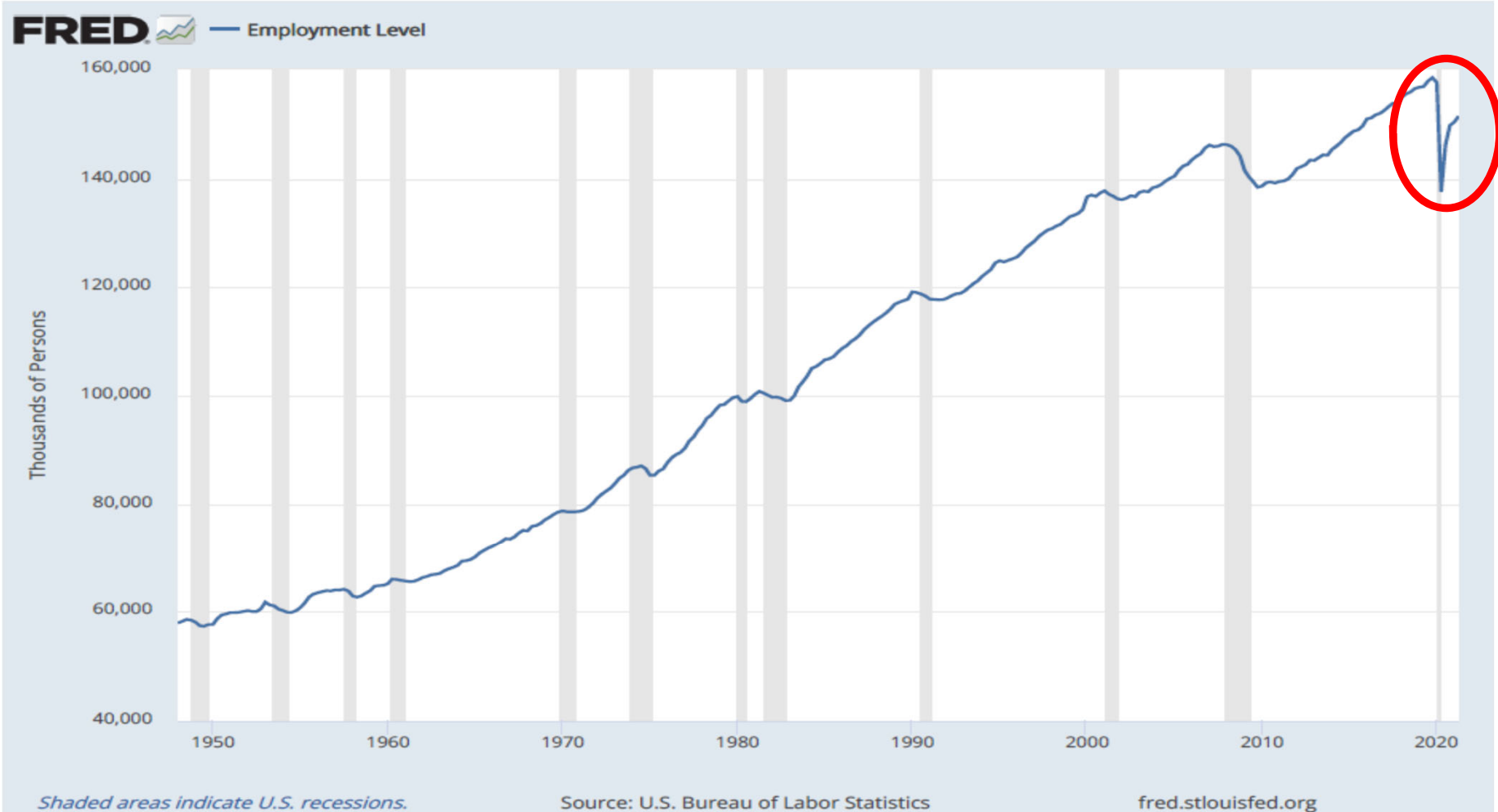
What are the facts?

- The Covid-19 Recession is like none other seen in modern times. Ironically, it is a gift to economics profession and we will be better off for the opportunity to study and learn from it.

- I will present the US and Germany as benchmarks, where possible the EU-27 as a foil, although the EU is hardly a monolith and hides significant variation across countries.

- Many more open questions in this unfolding drama as there are answers.

Fact 1: In the US, both output (real GDP)…

Real Gross Domestic Product

Peak to trough: - 10.1%

Shaded areas indicate U.S. recessions.

Source: U.S. Bureau of Economic Analysis

fred.stlouisfed.org

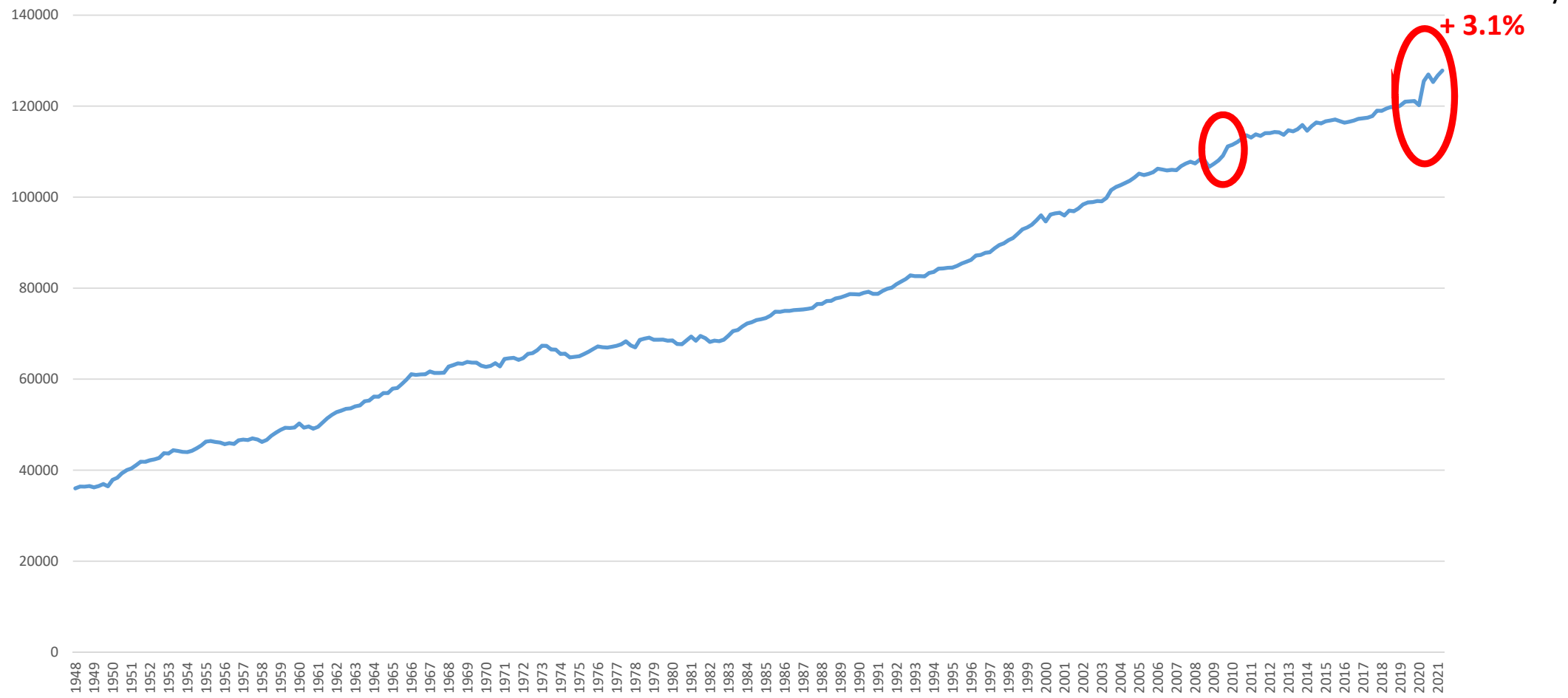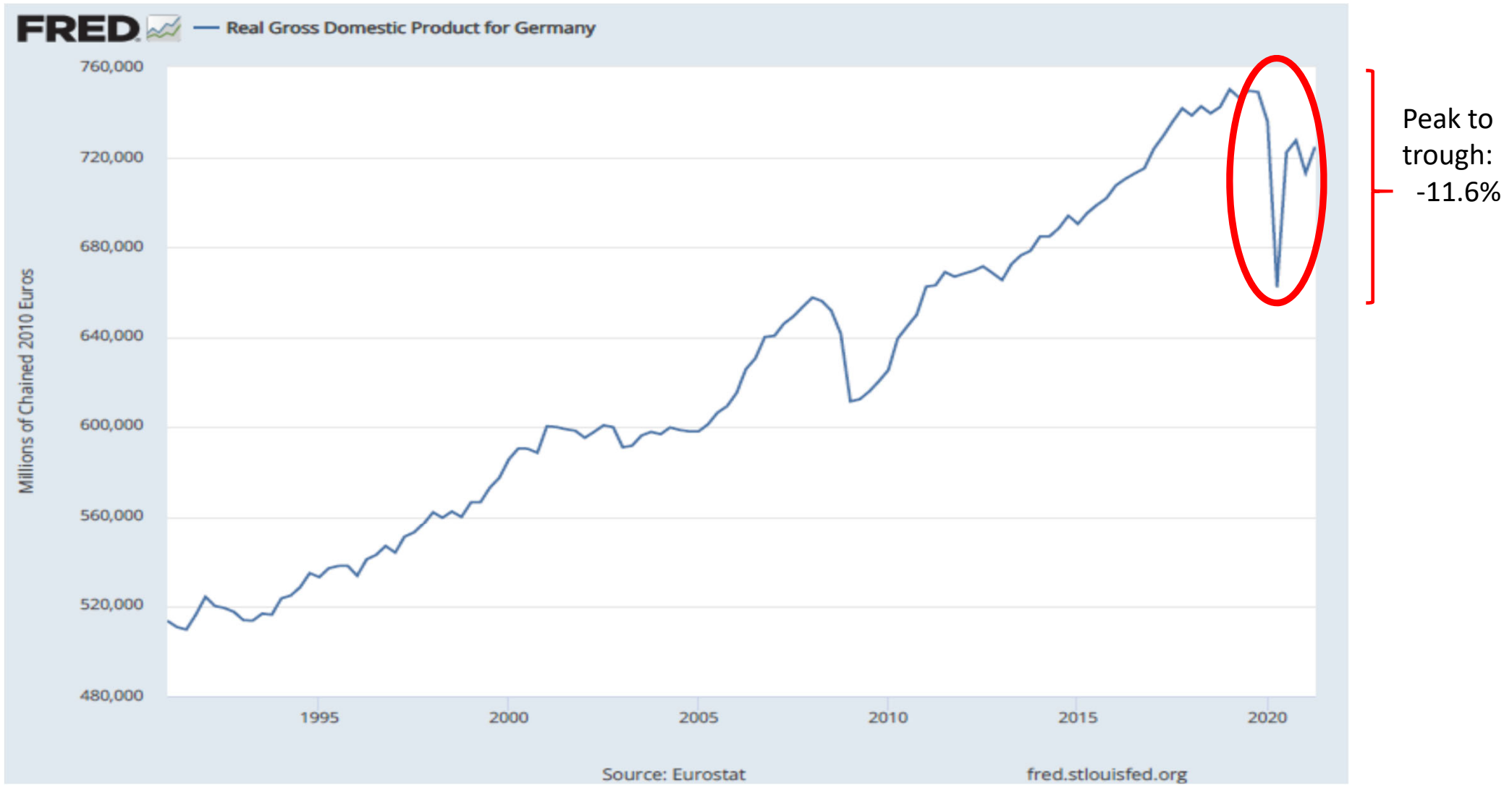# Fact 1: ....employment declined sharply in the Covid recession...

Peak to trough: - 13.2%

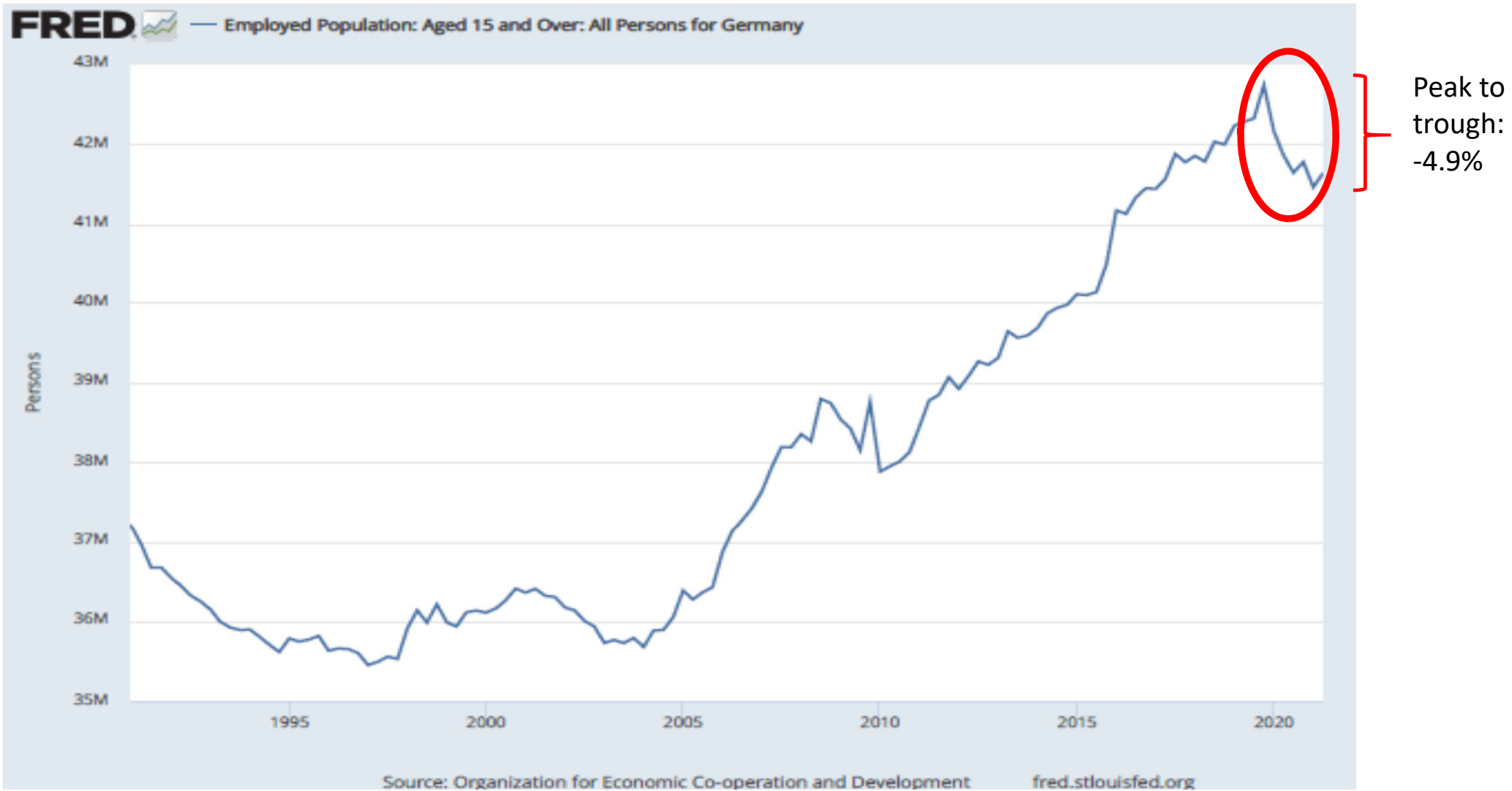# Fact 1: ...and US productivity per employed person *rose*

Real GDP per employed person (chained 2012 dollars)

Change in Productivity
+ 3.1%

Fact 2: German GDP and employment also declined in the Covid recession

FRED — Real Gross Domestic Product for Germany

Peak to trough: -11.6%

Source: Eurostat

fred.stlouisfed.org

Fact 2: German GDP and employment also declined in the Covid recession

FRED 〰️ — Employed Population: Aged 15 and Over: All Persons for Germany

Peak to trough: -4.9%

Source: Organization for Economic Co-operation and Development · fred.stlouisfed.org

Fact 2: German productivity per employed person *FELL*

Real GDP per employed person (chained 2012EURO)

GDP/Employed person, Germany

Peak to trough: -11.5%

Gap to peak in August 2021: -2.9%

Implications of Facts #1 and #2

- In both Germany and the US, real GDP declined.

- In the US, employment and employees fell dramatically, in Germany less so and spread over a longer period.

- Labor productivity rose in the US, and declined in Germany

- The decisive question concerns the relevant *margins.*

- Remember: $Y = F(K,L) = F(K,hE)$ and if F is homogenous of degree 1, Then labor productivity per employed person is $Y/E=F(K/E,h)$, where E is employment and h is hours per employed

- Is it correct to claim that E fell most in the US, h in Germany/EU?

Fact 3: EU hours per employed person fell, US hours per employed unchanged
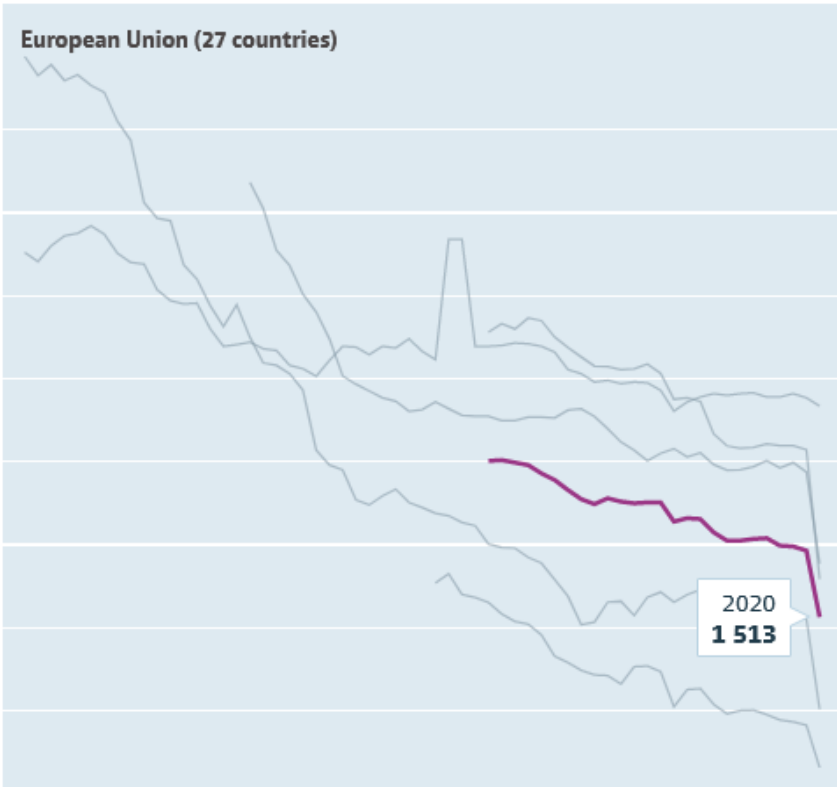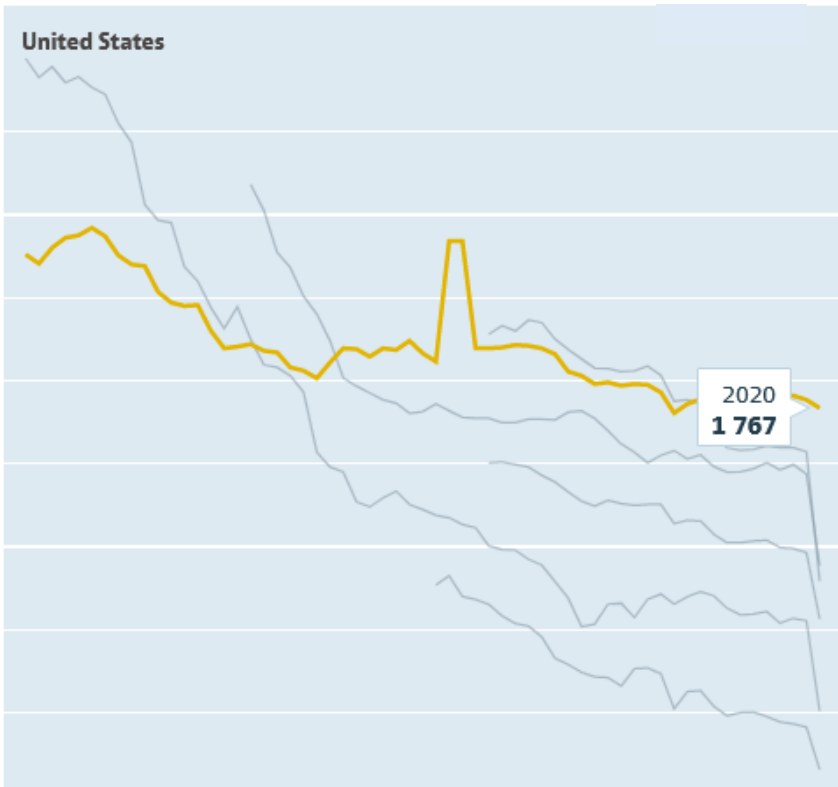
Fact 3: EU hours per employed person fell, US hours per employed unchanged

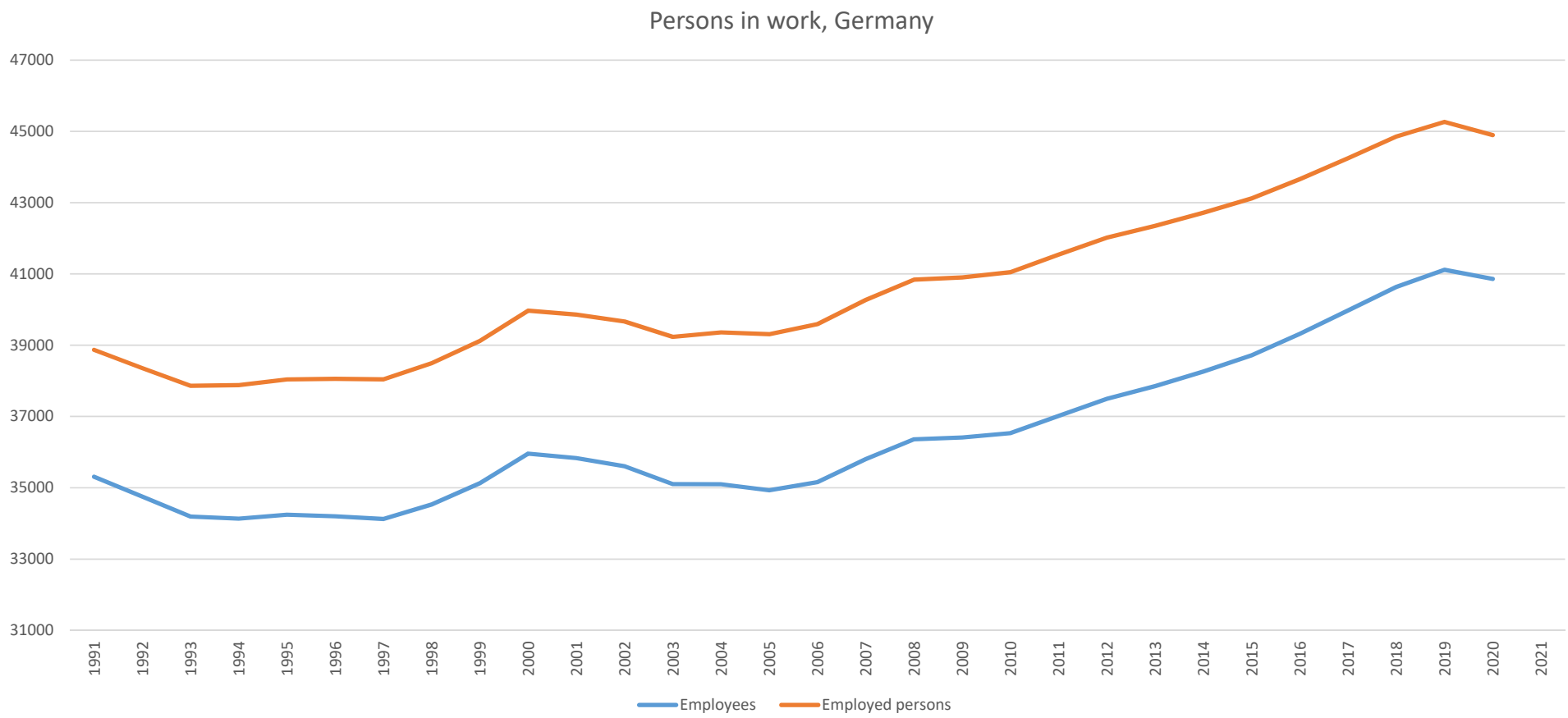**Hours worked** Total, Hours/worker, 1960 – 2020

European Union (27 countries) — EU — 2020 1 513

France — F — 2020 1 402

Germany — D — 2020 1 332

Italy — I — 2020 1 559

Spain — E — 2020 1 577

United States — USA — 2020 1 767
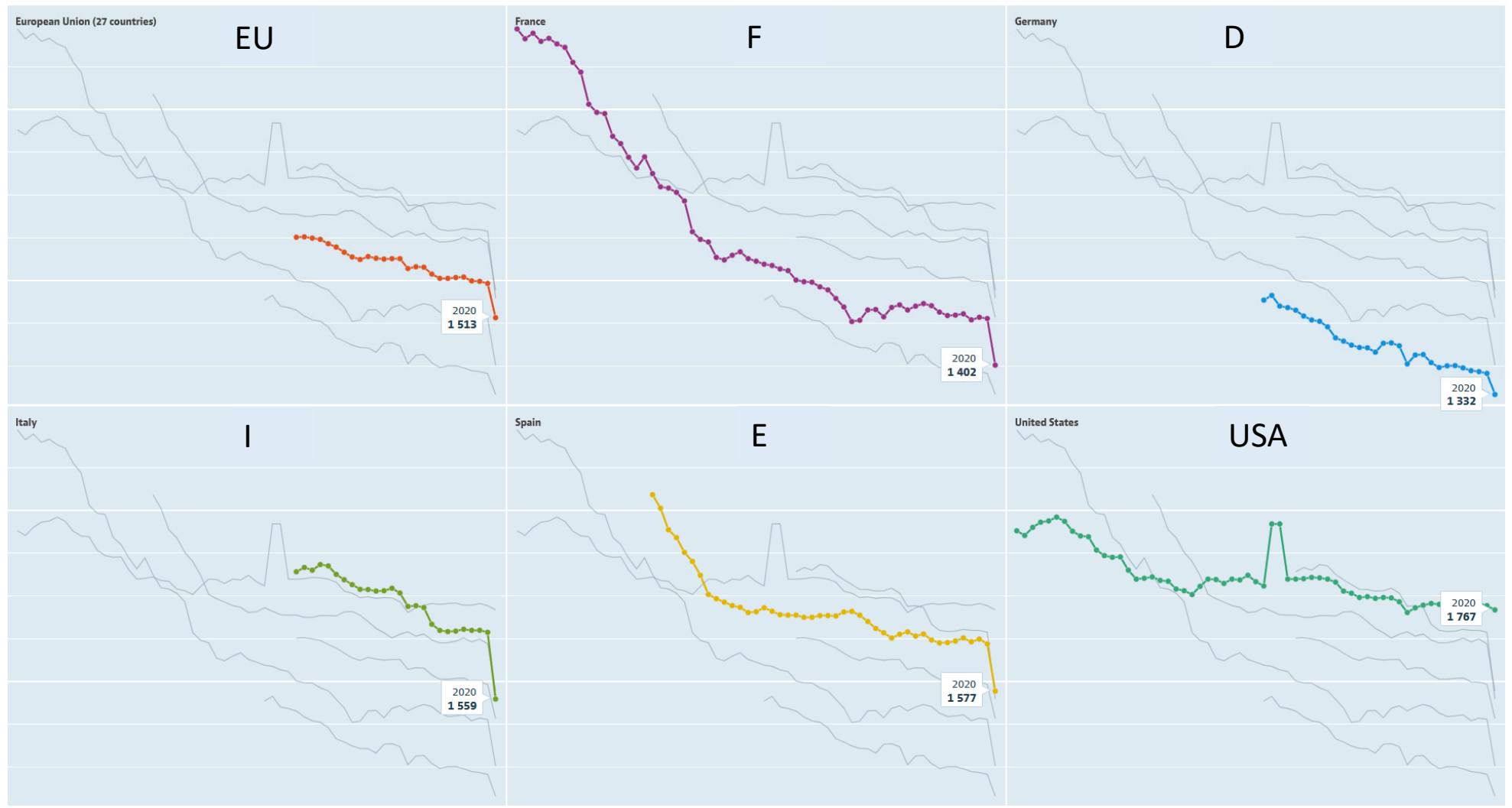
In the US, hours/*employee* even *rose* in the Covid-19 Recession (not like in GFC)

FRED — Average Weekly Hours of All Employees, Total Private

Peak to trough:
+ 1.7%

Shaded areas indicate U.S. recessions.   Source: U.S. Bureau of Labor Statistics   fred.stlouisfed.org
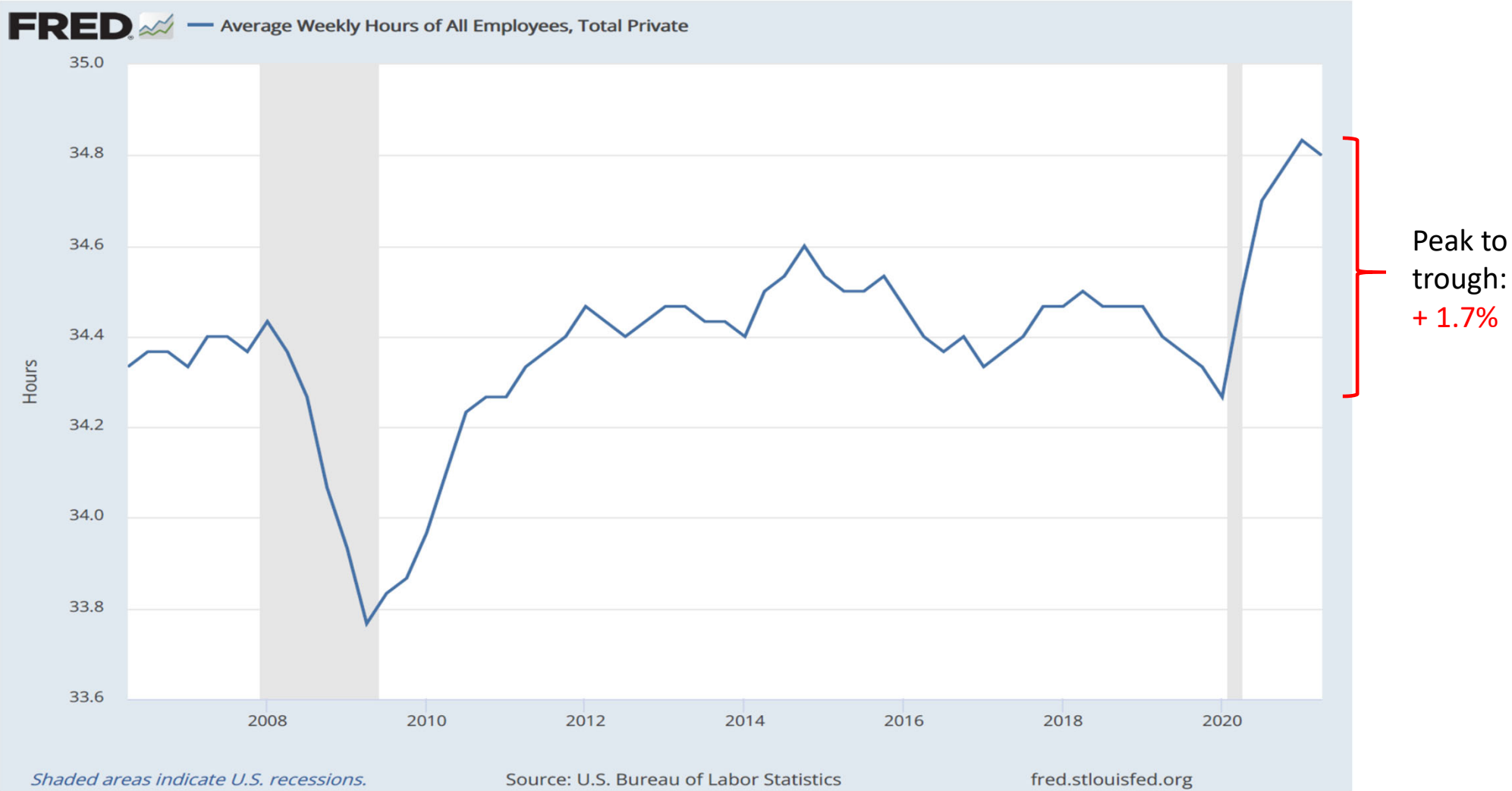
How much of this decline in Germany was a decline in *persons* (extensive margin)

Employees, employed persons

Persons in work, Germany

How much was it a decline in *hours per person (intensive)*?

Hours per employee, employed person

Annual hours worked per person, Germany

Hours per employee   Hours per employed
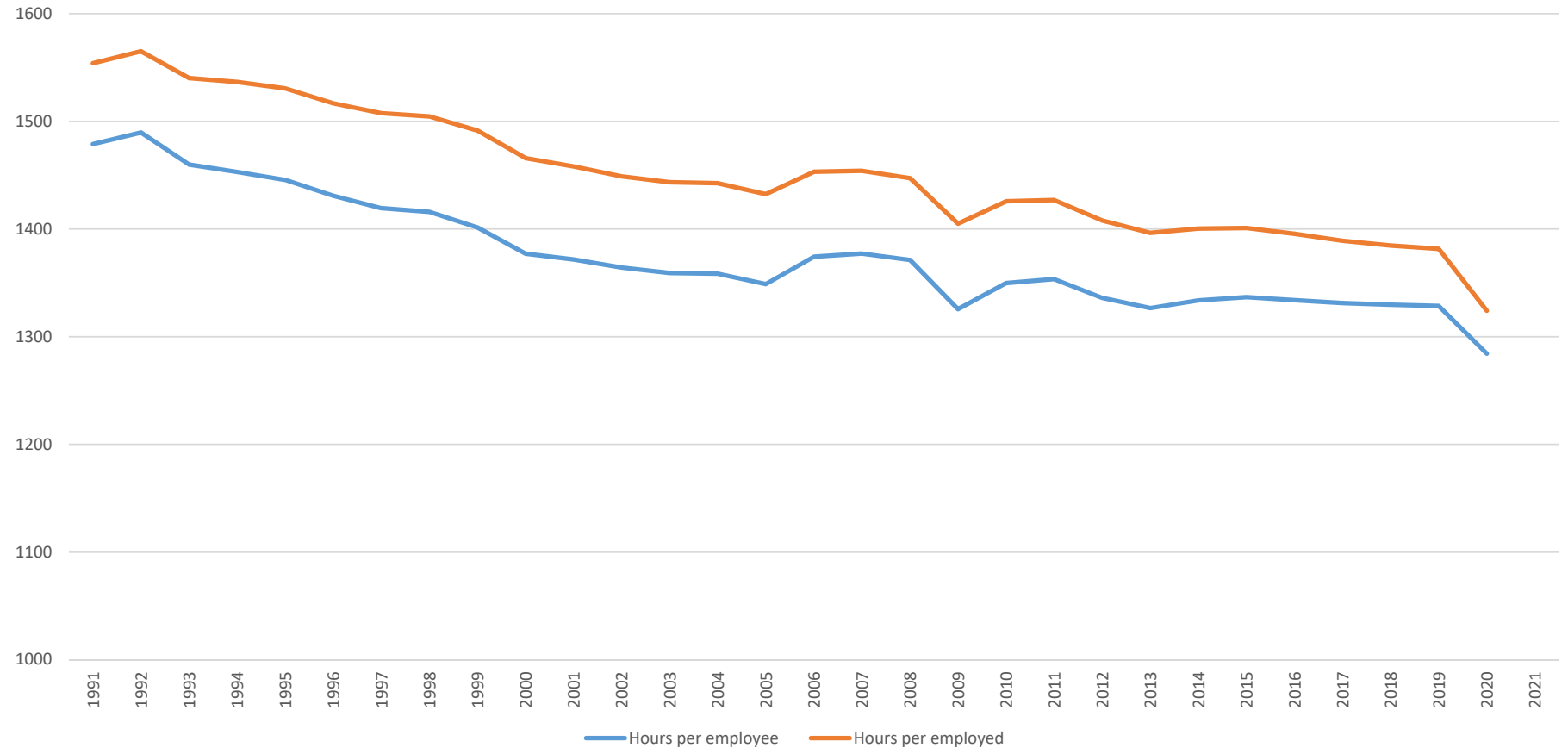
How much did *hours overall* decline?

Total hours worked employed and employees

Total hours worked, Germany
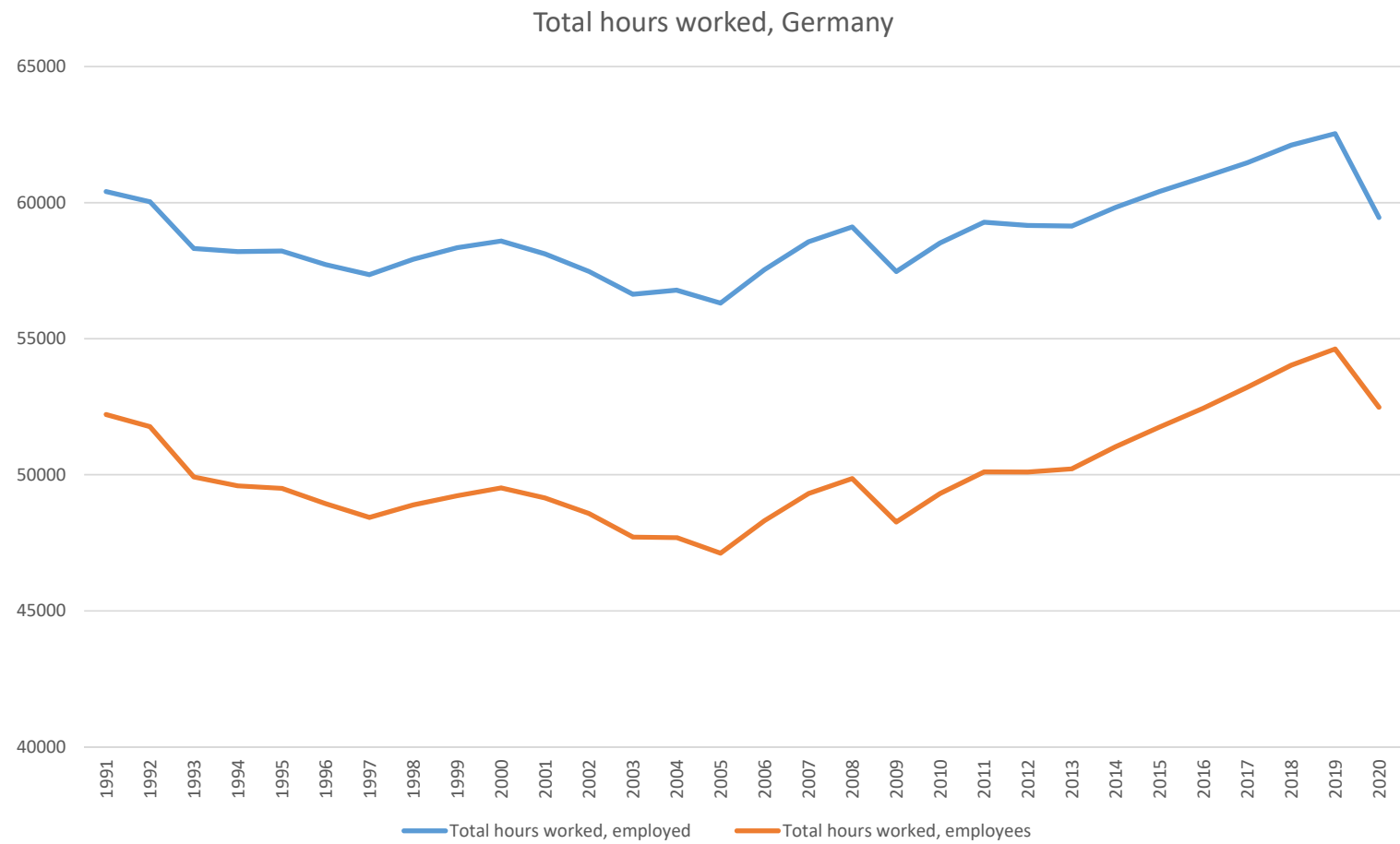
What happened to productivity in Germany?

GDP per hour, per employed person

GDP per hour

GDP per hour 2010 prices

GDP per employed person

GDP per employed person 2010 prices
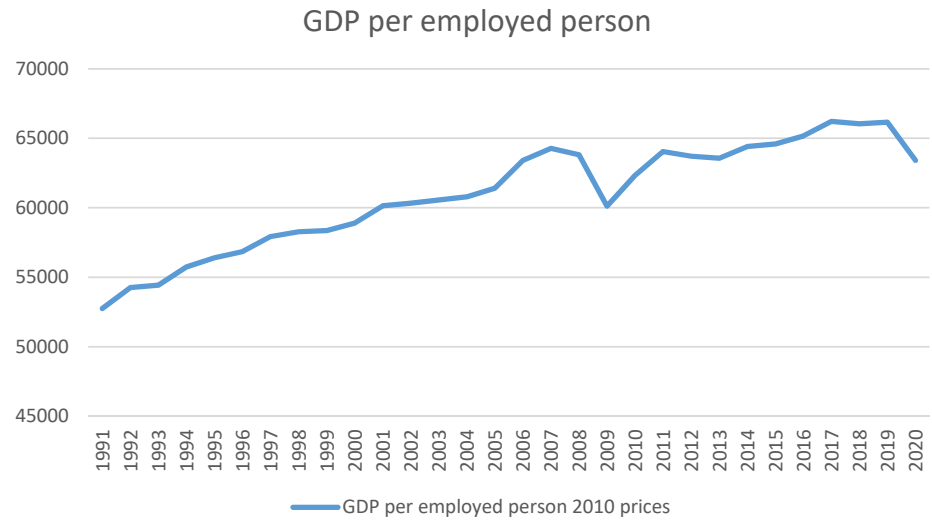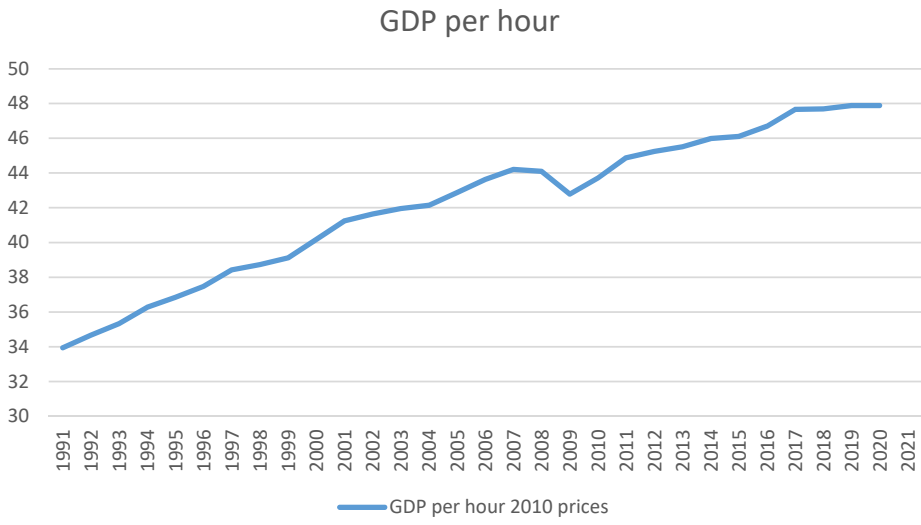
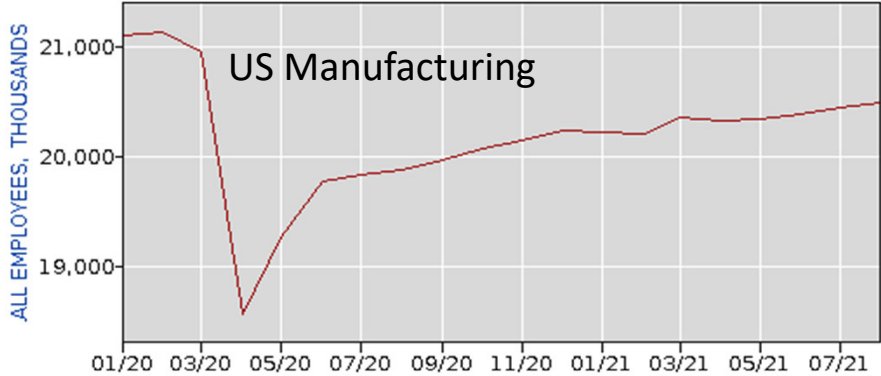# Fact #4: Sectoral entropy or *mismatch* is on the rise in the US
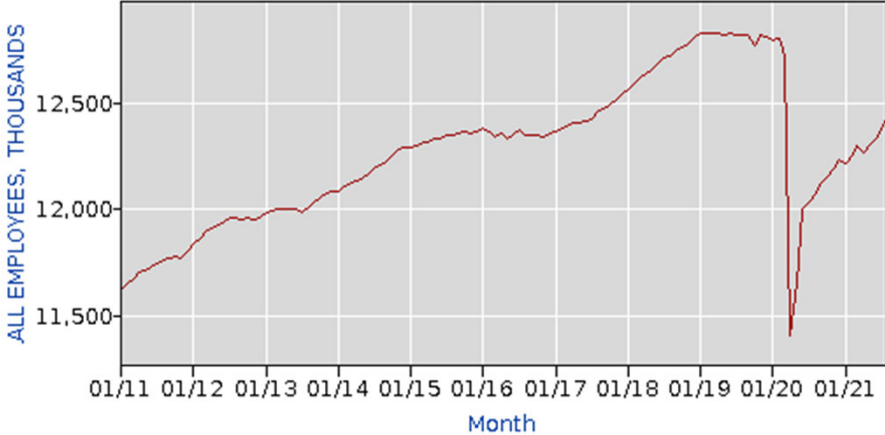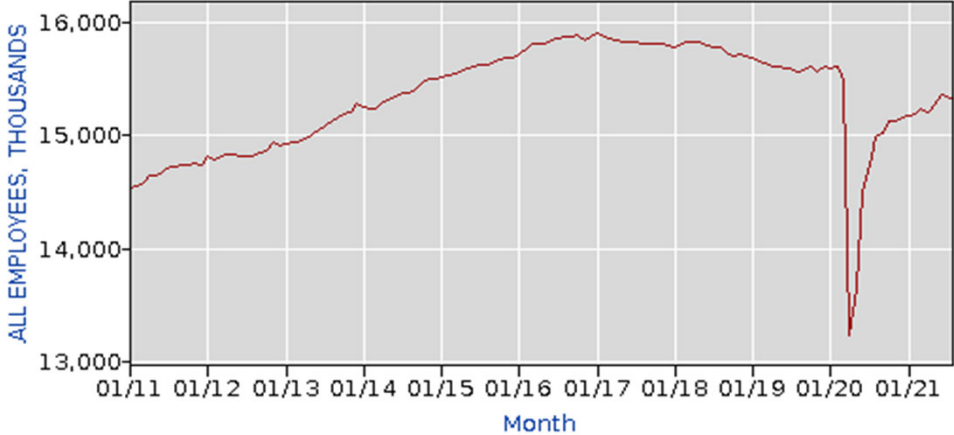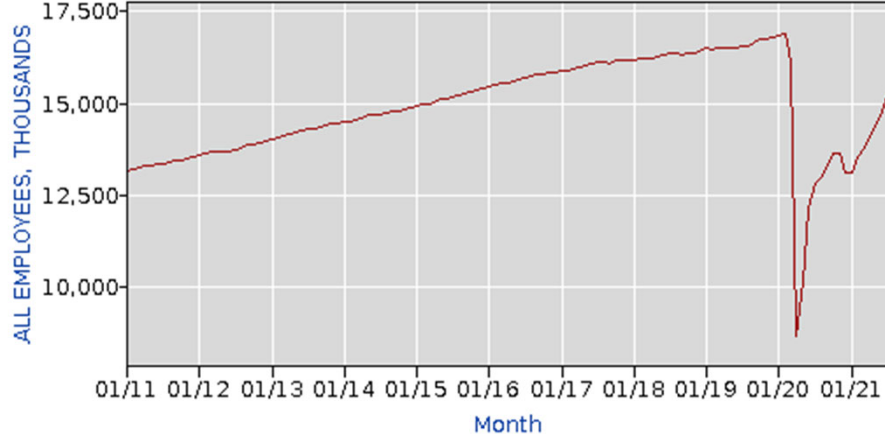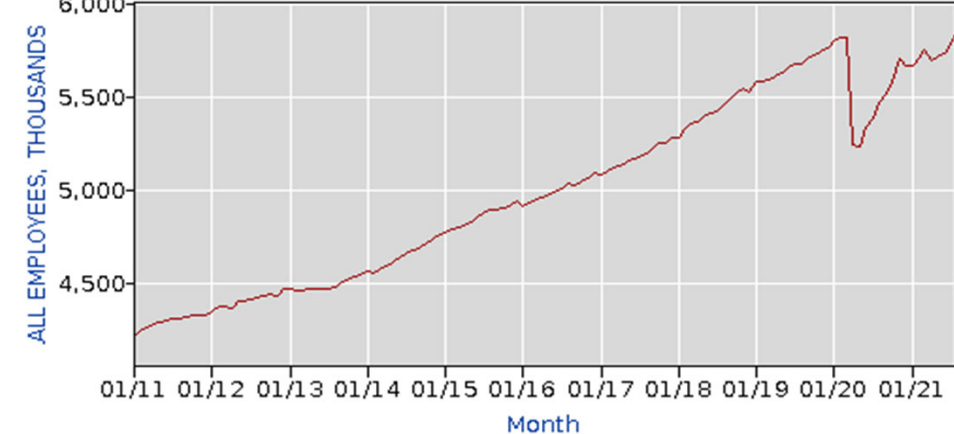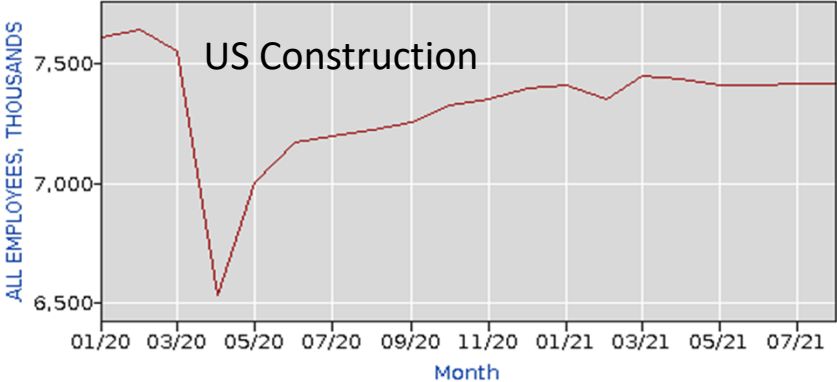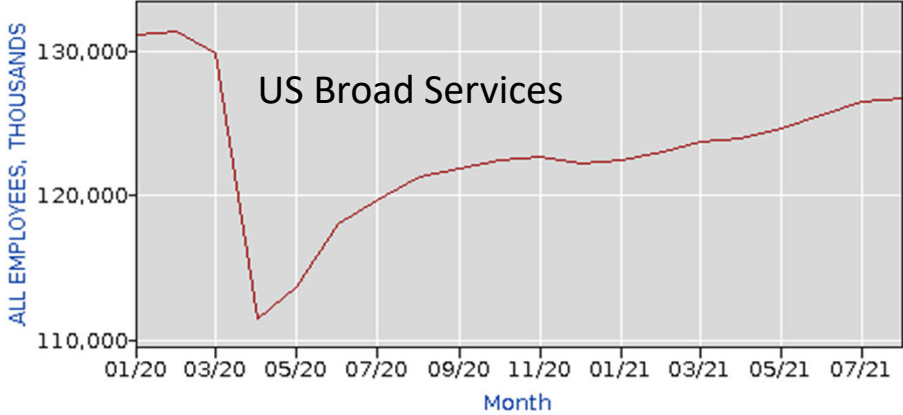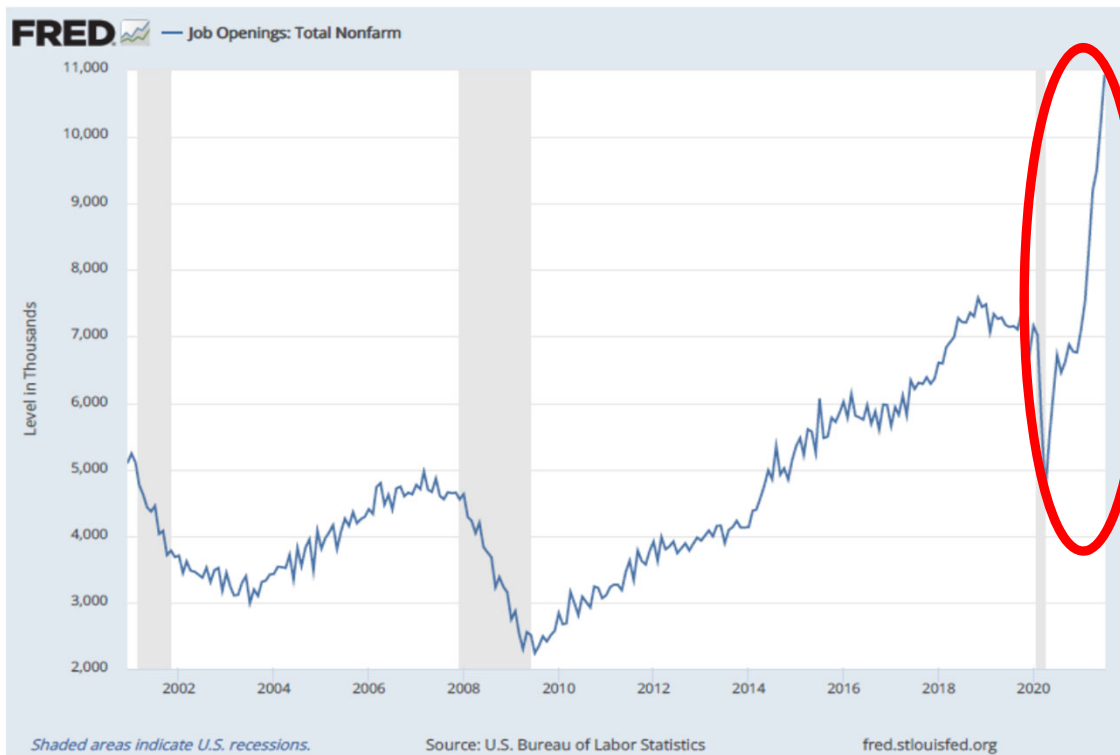
Fact #4: Mismatch is on the rise in the US – this recovery is very uneven, as opposed to the traditional wisdom established long ago by Abraham and Katz (1993)
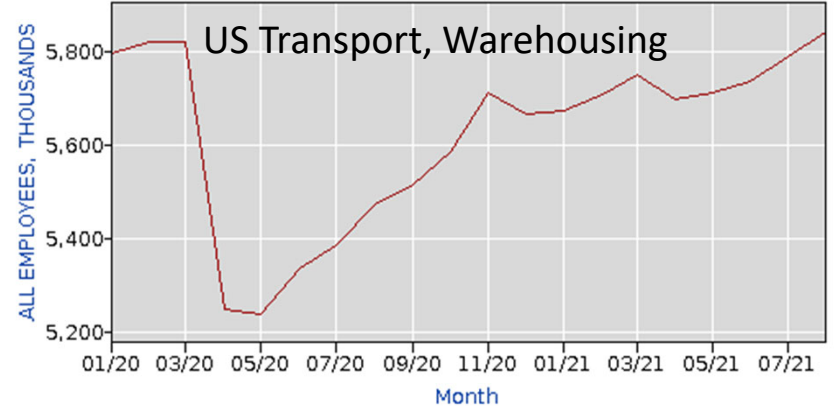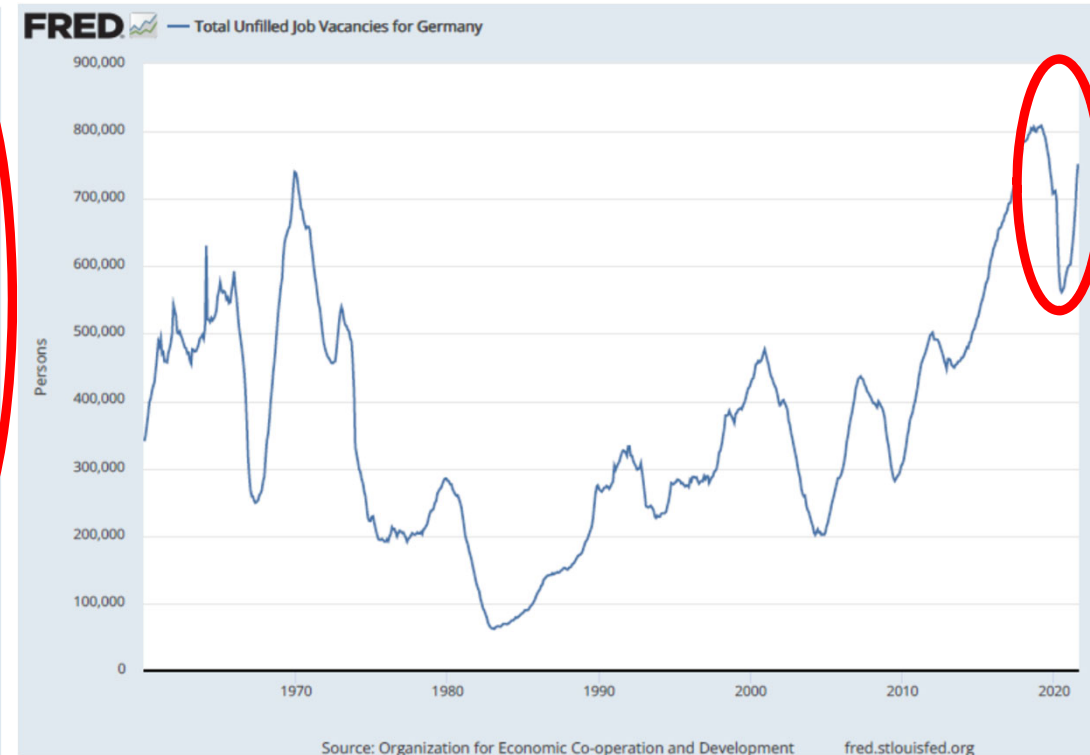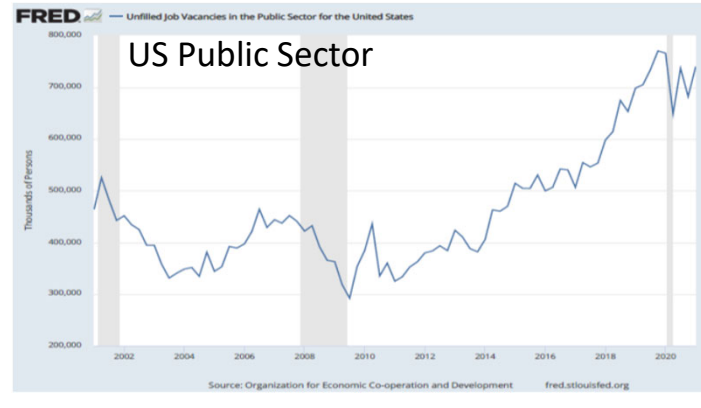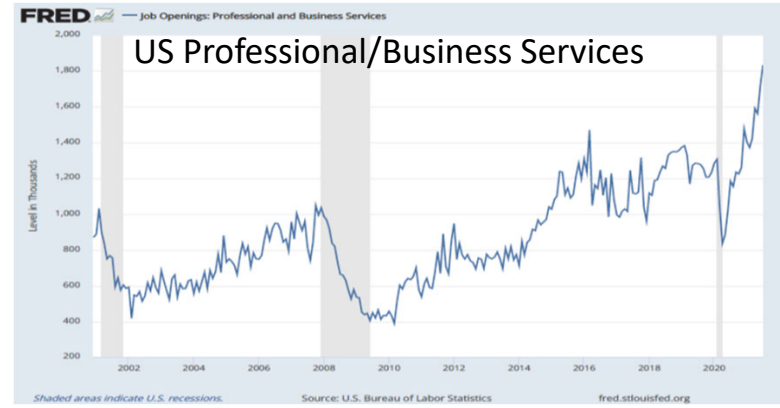
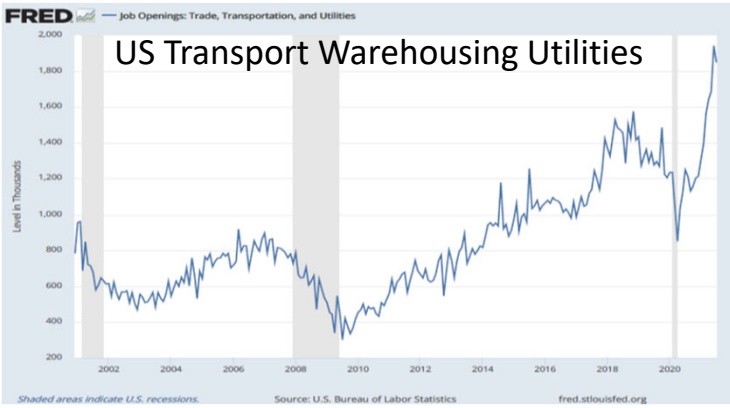# Unfilled vacancies more important in US than in Germany

USA

Germany

US Total Vacancies · US Manufacturing · US Retail Trade · US Health care and assistance · US Construction · US Accomodation, Food Services · US Transport Warehousing Utilities · US Professional/Business Services · US Public Sector

US Manufacturing

Broad Services

Construction

US Retail Trade

Transport, Warehousing
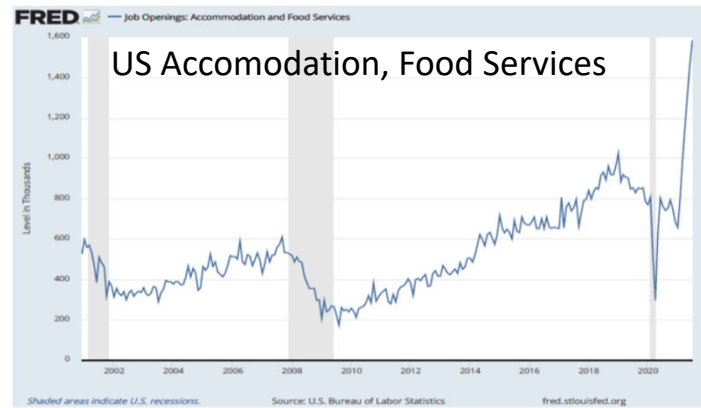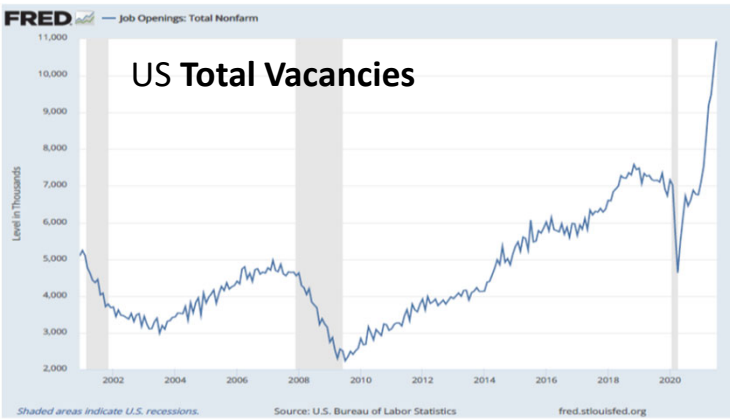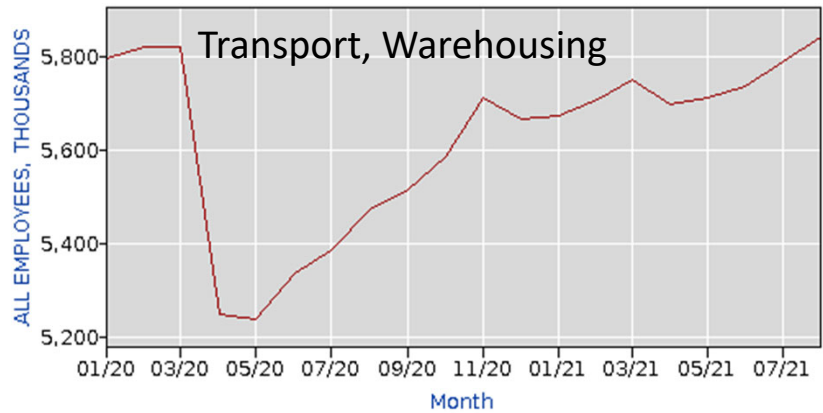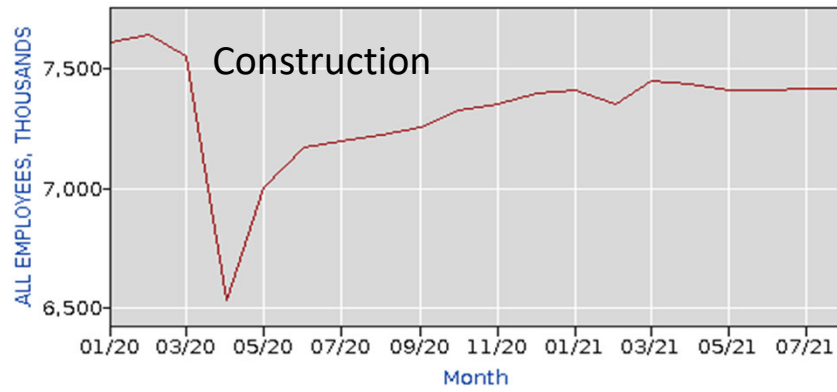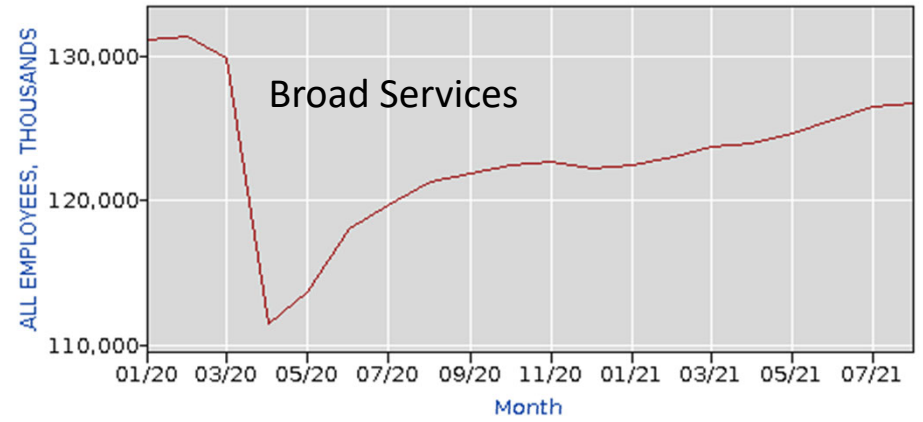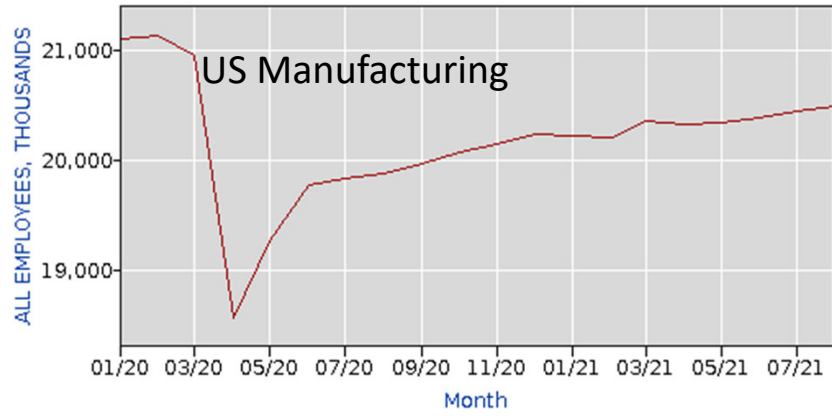
Questions

- What could it be?

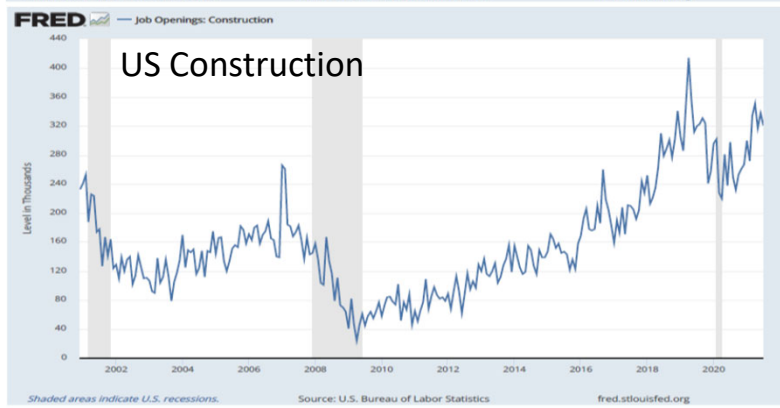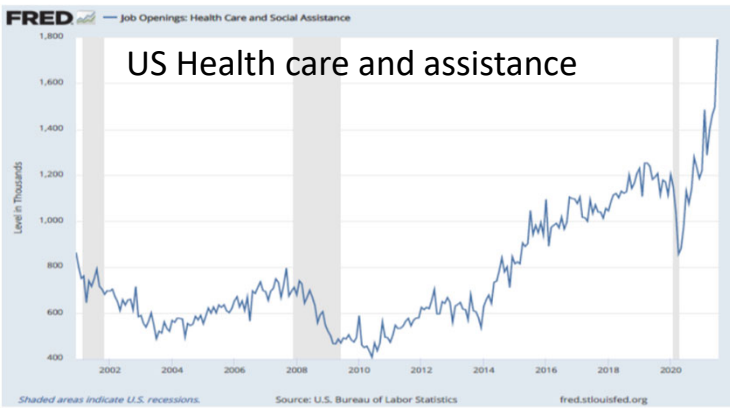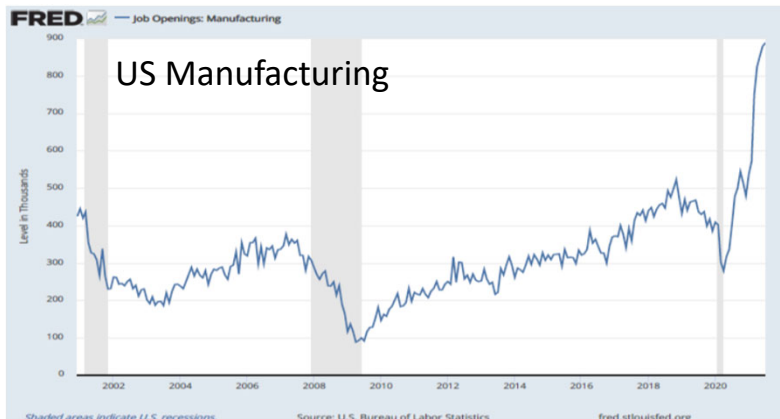— TFP collapsing? Unlikely but we will learn more with more data and future studies. The pandemic has taken a resource toll on firms

— Composition effect? Very likely in the US, delayed in Germany

— Unobservable worker effort?

- Why is this important?

- Does it make sense to think of the NAIRU as a stable quantity or one that can move suddenly?

- And what is potential output in this context?

Milton Friedman was clear:

...the level [of unemployment] that would be ground out by the Walrasian system of general equilibrium equations, provided there is embedded in them the actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the costs of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on."

Milton Friedman (1968)

The Original
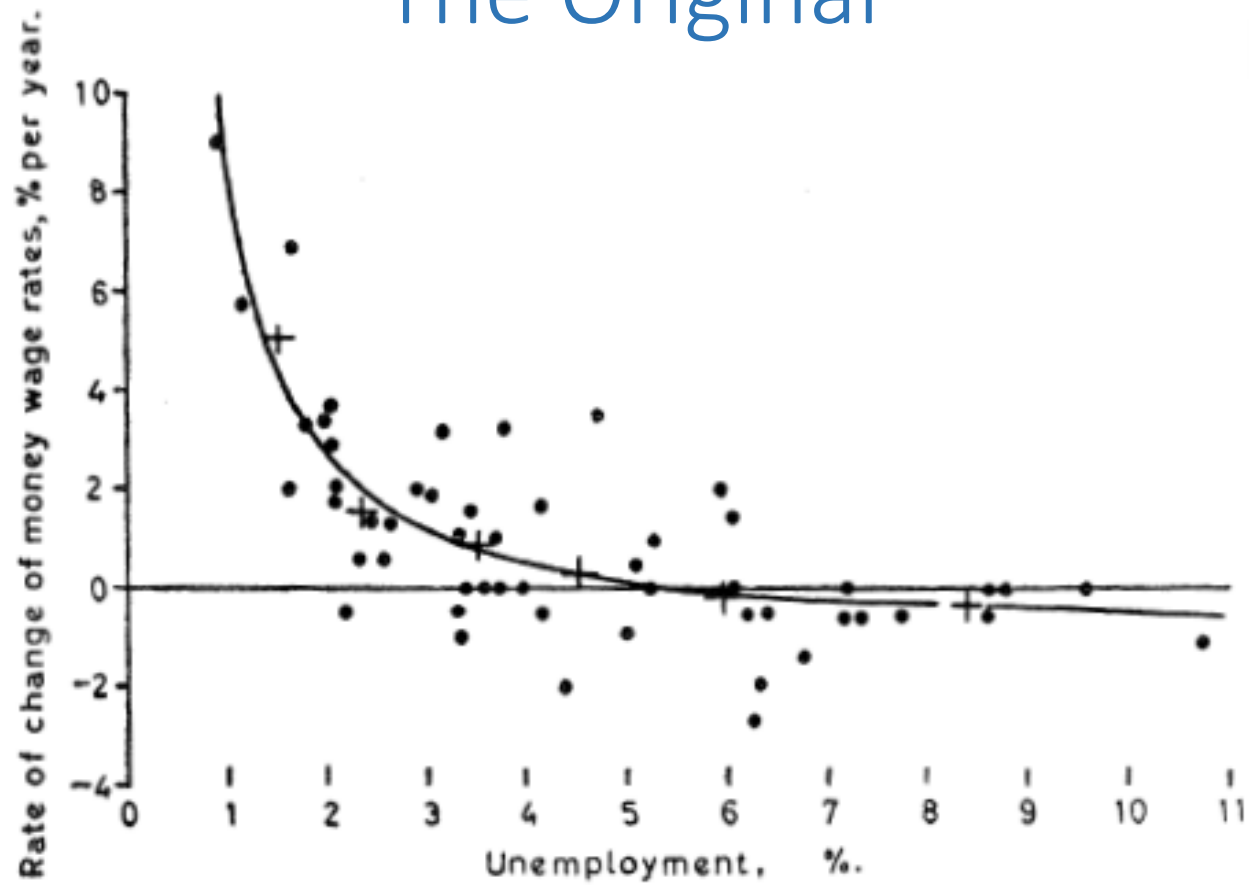
Fig.1. 1861 — 1913

Source: Phillips (1958)

Textbook version

FIGURE 13-5   INFLATION AND UNEMPLOYMENT, UNITED STATES, 1961–1969. (*Source:* Data Resources, Inc.)
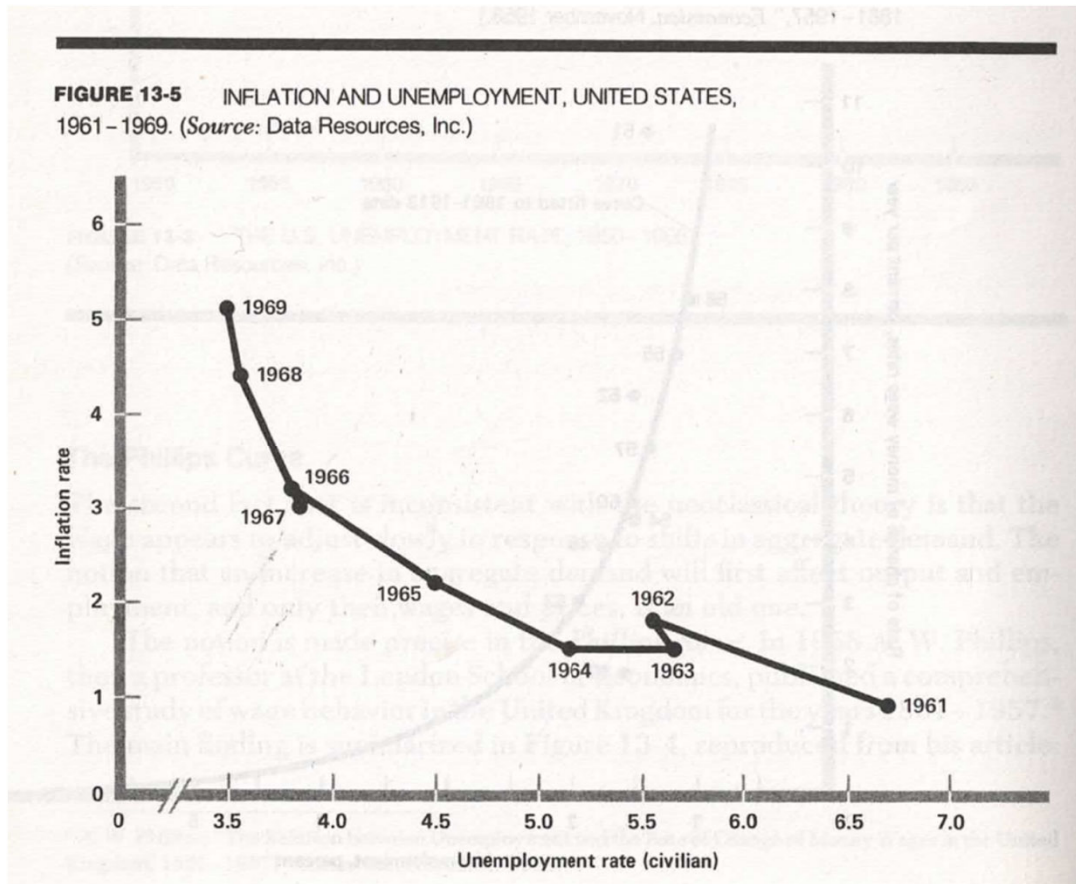
Source: Dornbusch and Fischer (1978)

Textbook version

FIGURE 13-6 INFLATION AND UNEMPLOYMENT, UNITED STATES, 1961–1985. (*Source:* Data Resources, Inc.)
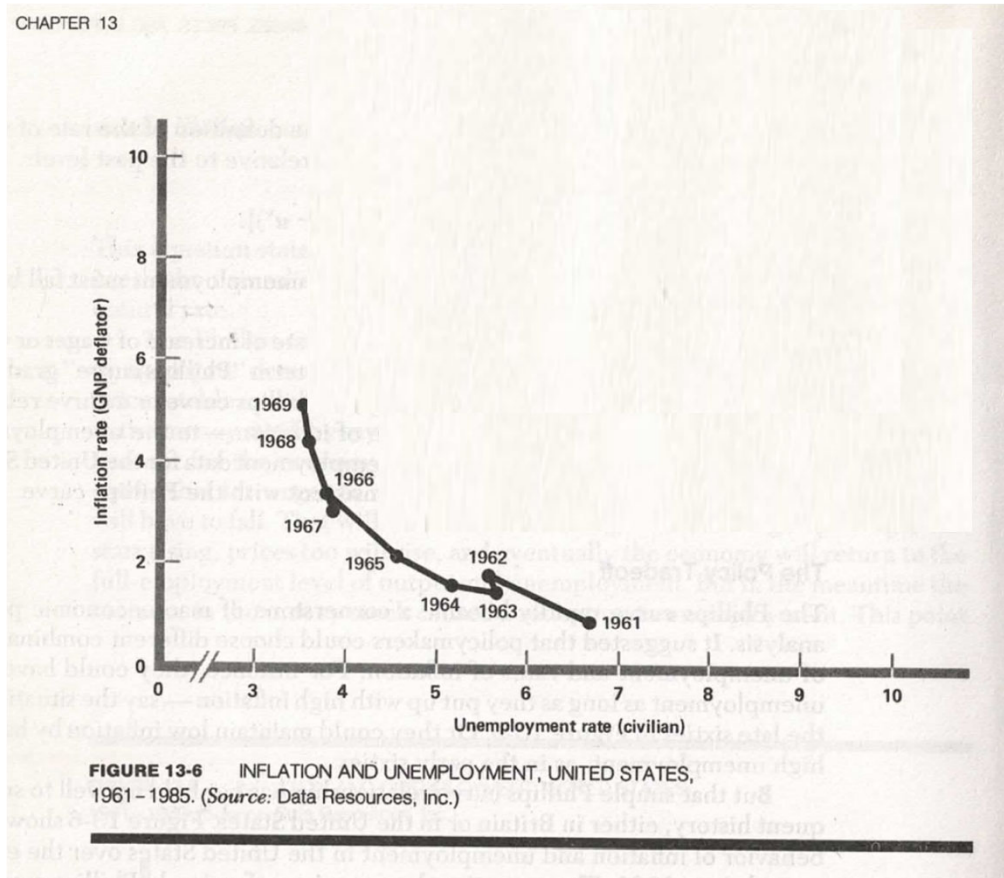
Source: Dornbusch and Fischer (1987)

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CHAPTER 13

FIGURE 13-6 INFLATION AND UNEMPLOYMENT, UNITED STATES, 1961–1985. (*Source:* Data Resources, Inc.)
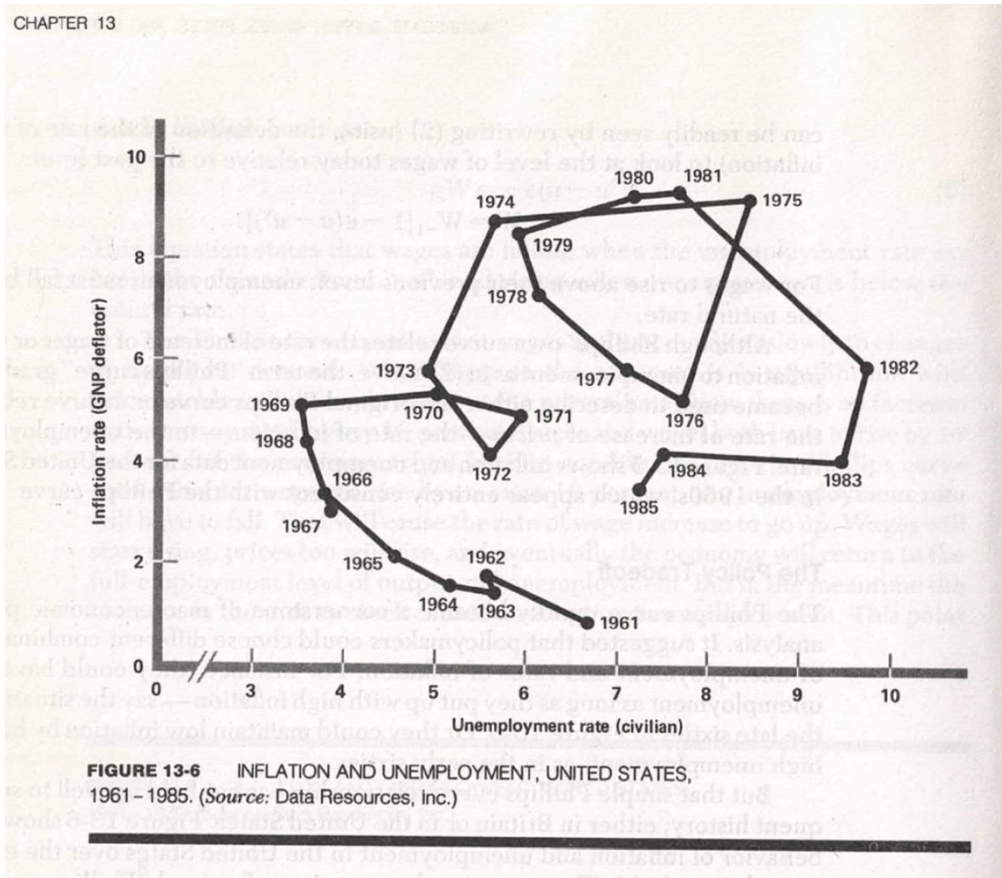
Source: Dornbusch and Fischer (1987)

New Keynesian Phillips Curve is the old one in new clothes

- *Ceteris paribus*, expect a negative correlation between changes in inflation and changes in growth, or changes in unemployment rate

- The relationship depends on institutions

- The "ceteris" is hard to understand, and the levels are even harder because they depend both on institutions and expectations of the future – future inflation, future expected marginal costs and future expected institutional conditions

New Keynesian Phillips Curve is the old one in new clothes

- Consider the basic formulation of the NKPC:

$$\pi_t = RE_t\pi_{t+1} + \kappa y_t + \varepsilon_t$$

where y_t is a measure of the "output gap" in t and ε_t is a measure of supply shocks, R<1; E_t is the conditional expectations operator

- No inertia/indexing/backwardness in this fundamental(ist) version. Under rational expectations yields, assuming $E_t\varepsilon_{t+i} = 0 \ \forall t \geq 0$:

$$\pi_t = \sum_{i=0}^{\infty} R^i[\kappa E_t y_{t+i}]$$

New Keynesian Phillips Curve is the old one in new clothes

- A more realistic version:

$$(1 - \alpha L)\pi_t = RE_t\pi_{t+1} + \kappa y_t + \varepsilon_t$$

where α captures indexation or backward reference; L is the lag operator

- In this modified and more realistic version

$$\pi_t = (1 - \alpha L)^{-1} \sum_{i=0}^{\infty} R^i [\kappa E_t y_{t+i}]$$

and is reminiscent of Blanchard's (1979) forward- and backward-looking solutions of rational expectations models.

# New Keynesian Phillips Curve is the old one in new clothes

- The expected future course of real marginal costs is essential in the NKPC perspective.

- What is the real world proxy for that?

- Two-thirds of value added is labor. Costs of finding, attracting and retaining workers are rising – as indicated by vacancies, especially in the US. Wages are not yet reacting but seem destined to do so

- What is the behavior of "real marginal cost" in US and Germany?
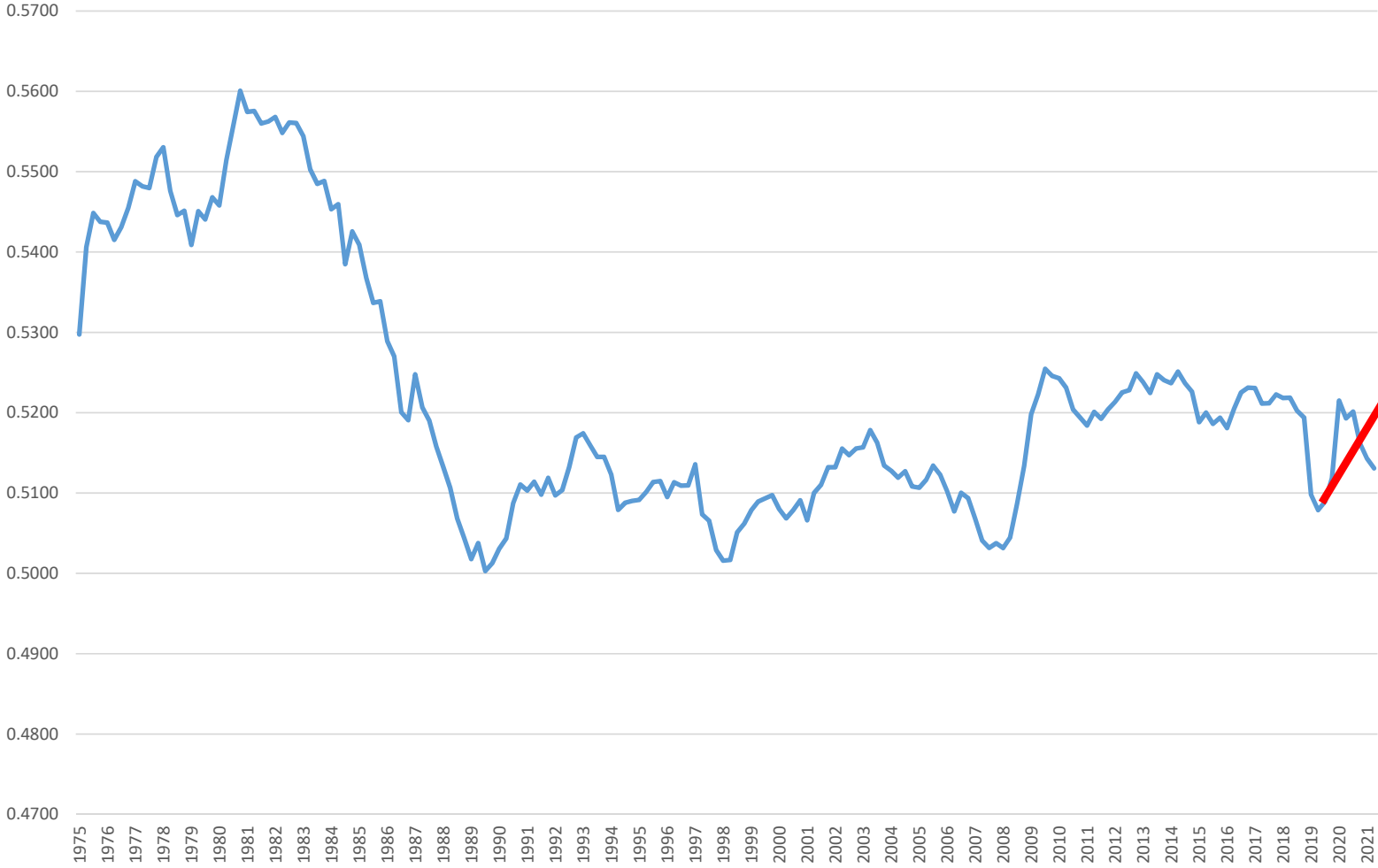
  Remember: WL/PY=(W/P)/(Y/L) = labor share!

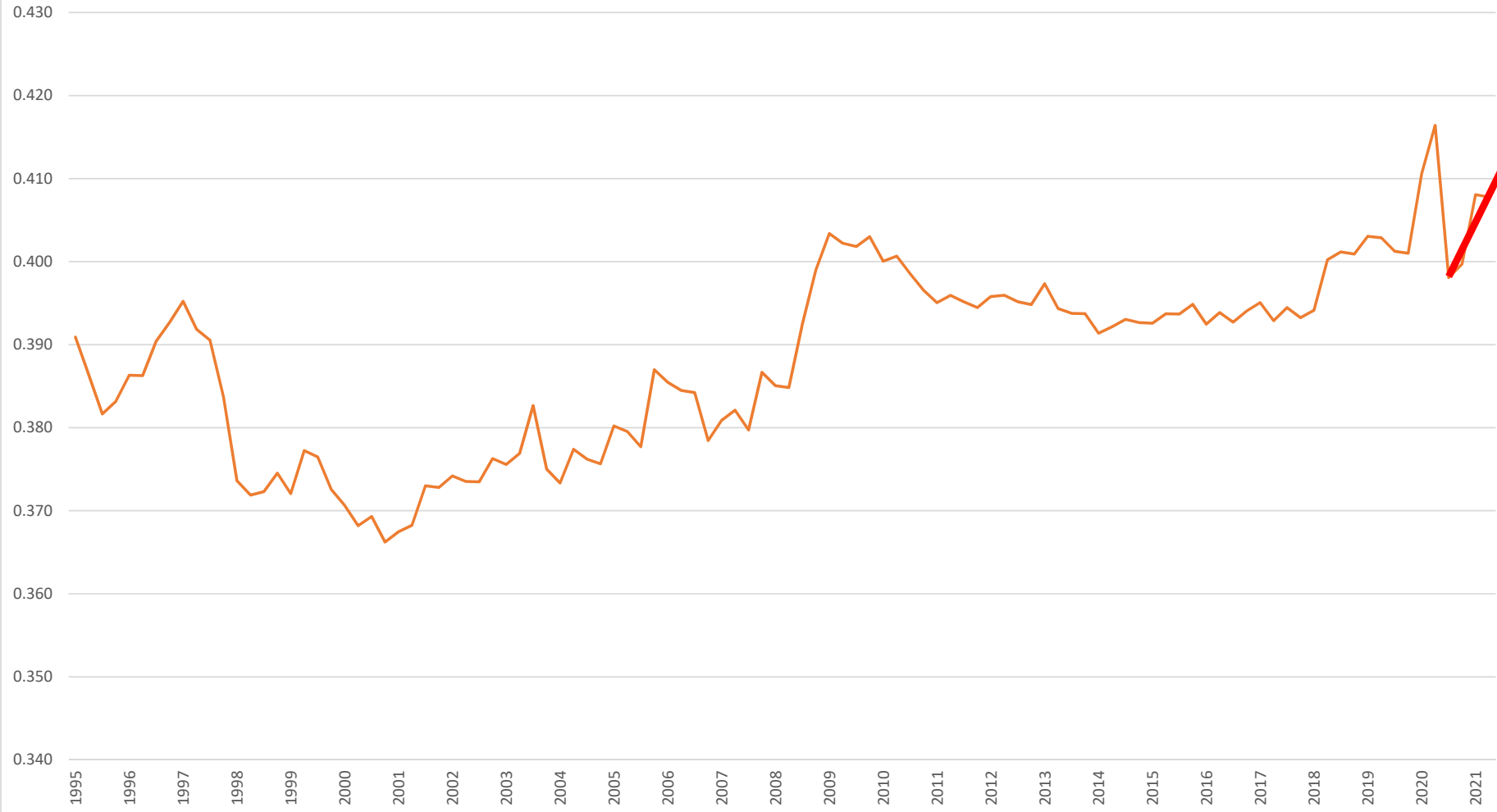Labor Share, USA, total economy
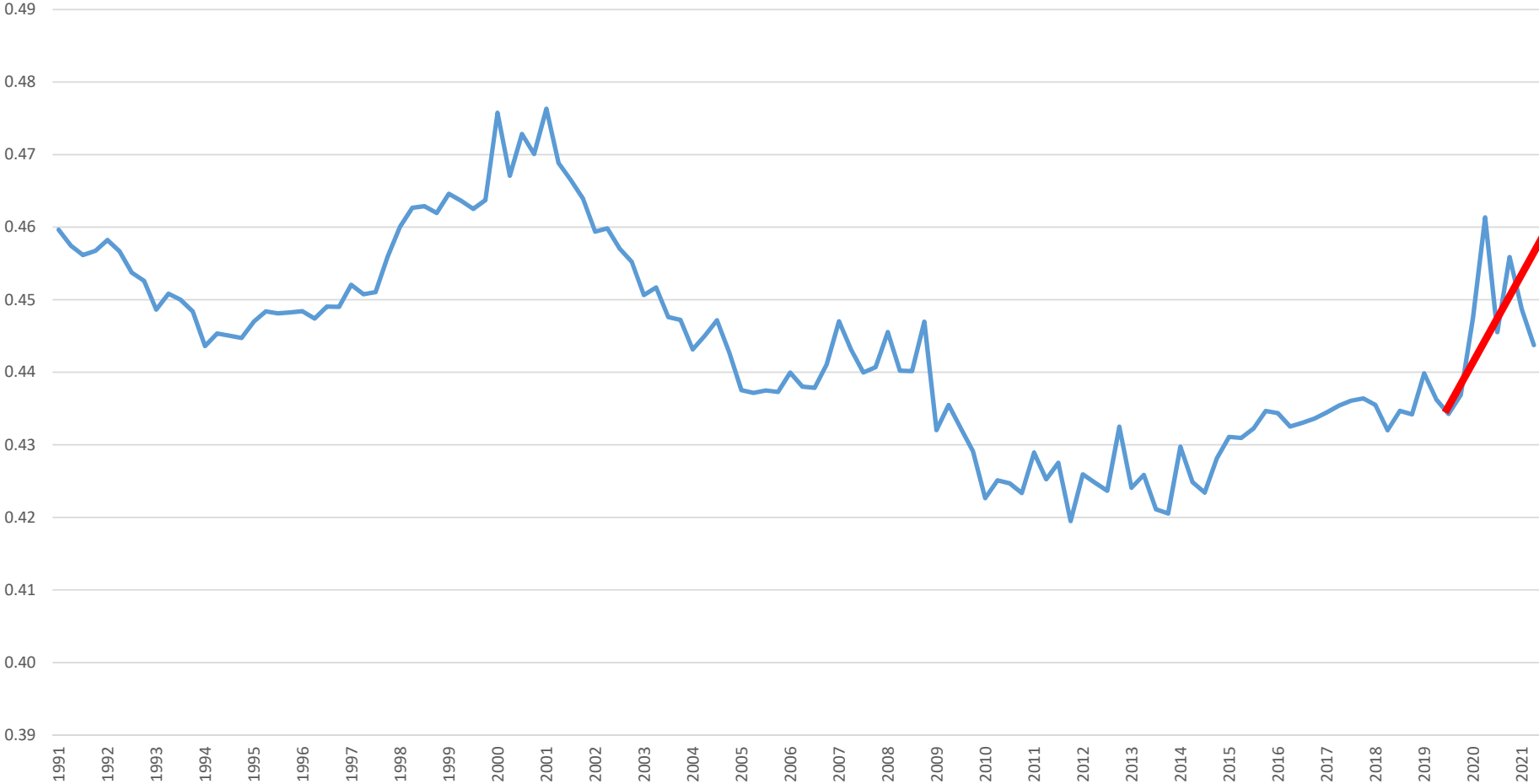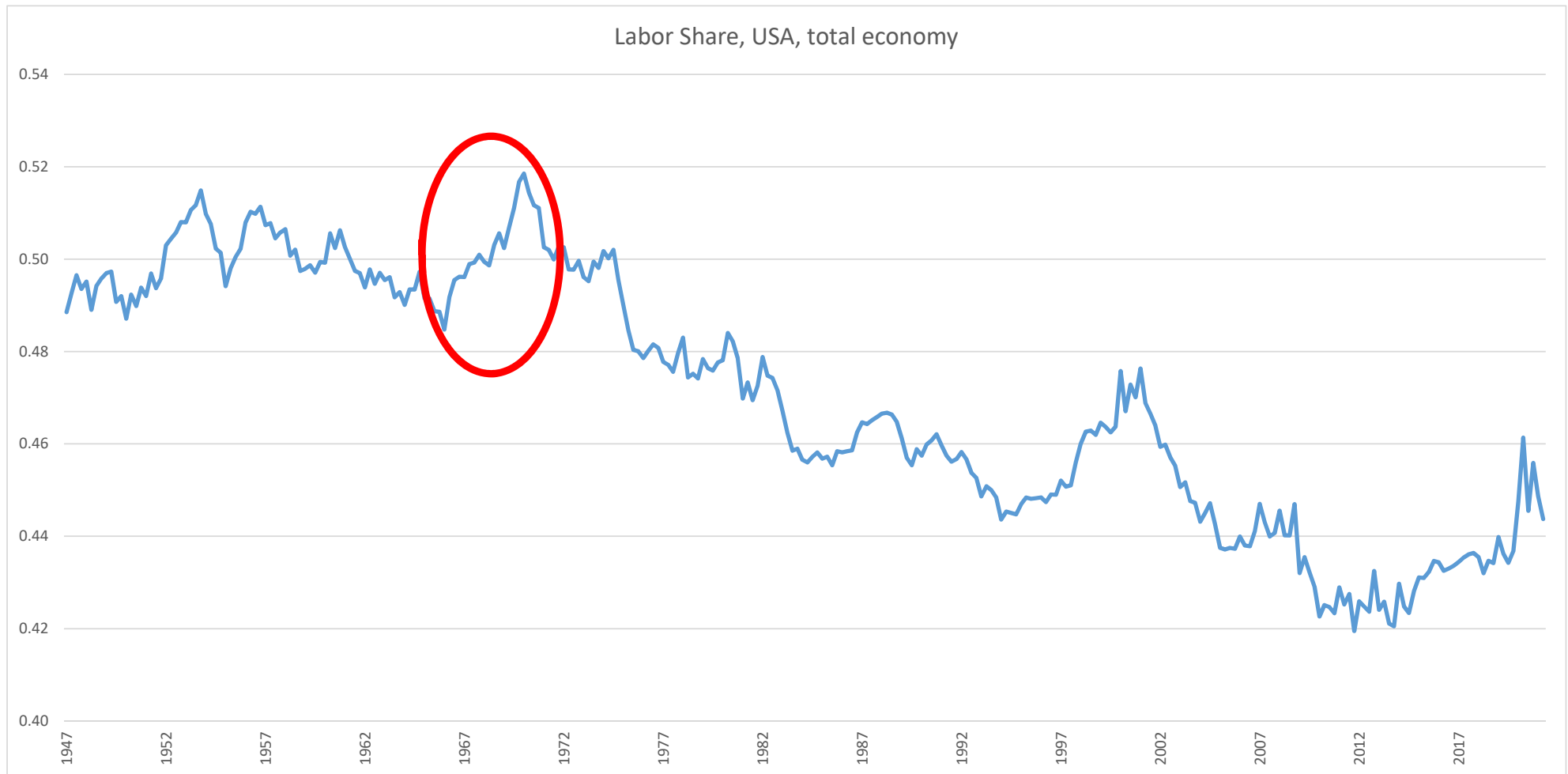
Labor Share, Germany, total economy
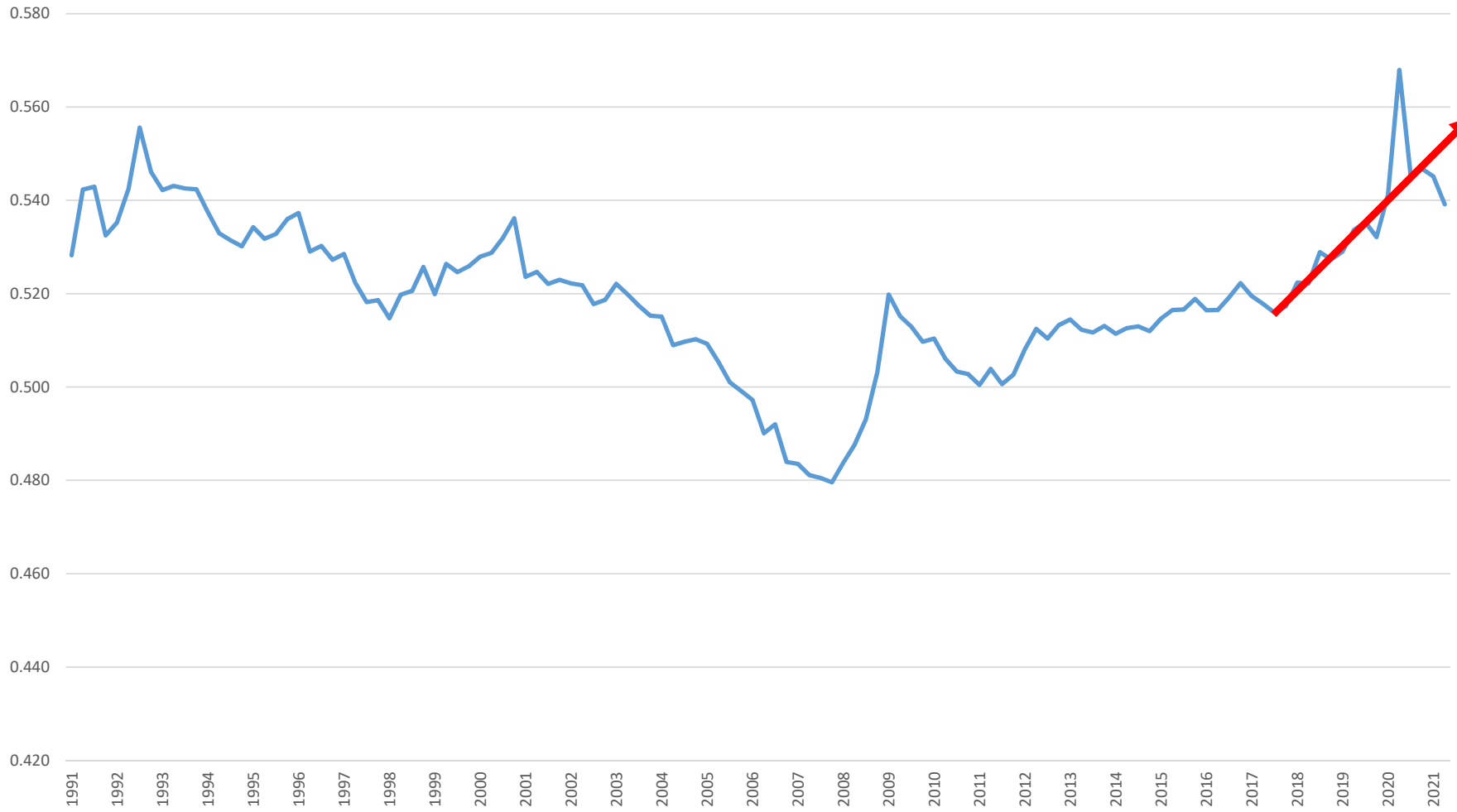
Labor Share, France, total economy

Labor Share, Italy, total economy

A final note: The eve of the Great US Inflation

Labor Share, USA, total economy

A final note: The eve of the Great US Inflation
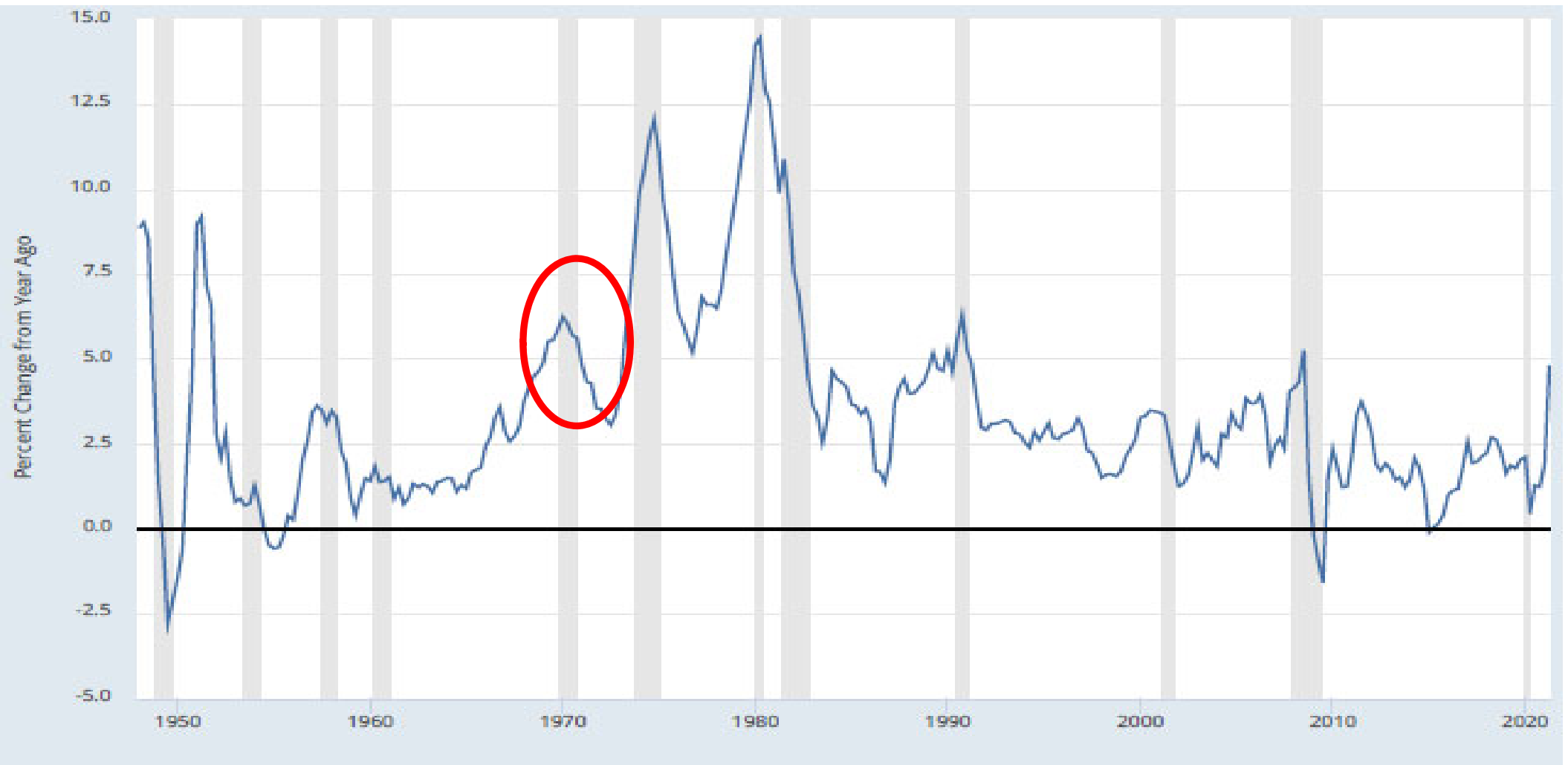
Evolution of wages will be key

- **Labor supply behavior** will drive this development

- **Collective bargaining institutions** (union coverage, minimum wage, unemployment benefits) will play a central role, also in the US

- It will take some time before the ball gets rolling, but US labor markets appear extremely tight – the search and matching approach predicts that wages will rise, even if sectorally uneven; less so in Europe (except for Germany)

- Immobility of workers, within and across geographic and sectoral borders - strengthened by immigration restrictions and generous unemployment insurance policies – can accelerate wage inflation

Conclusion

- The effect of the Covid Recession on inflation is *ambiguous* regarding marginal costs. EU and US saw sharp increases followed by increased hours/worker (Germany, EU) or productivity (US).

- The wild card - and the reason that the NAIRU and potential output is only a small part of the story – is that labor supply shocks have become increasingly important an integrated global integrated economy, and will play a central role in the future evolution of inflation.

- Potential output may not be a useful concept under these conditions – because it is difficult to pin inflation changes to a monolithic indicator.

- Research should be devoted to understanding the value-added chain, the input-output matrix and the role of supply shocks in the evolution of inflation rather in the estimation of potential output.

Thanks for your attention!